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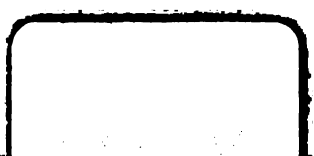
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*Dr. S. P. J. Jackson*

# THE OHIO GAS AND OIL MEN'S JOURNAL

Vol. 3

JANUARY, 1921

No. 1



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Some of you did and some of you didn't and those of you who didn't must have forgotten to make that New Year's resolution to pay up your dues. Second notices are being sent out this week to all delinquents and we hope this further reminder will succeed in bringing the matter of dues to your personal attention.

10-10-22

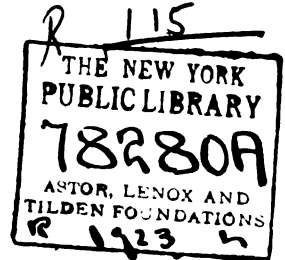
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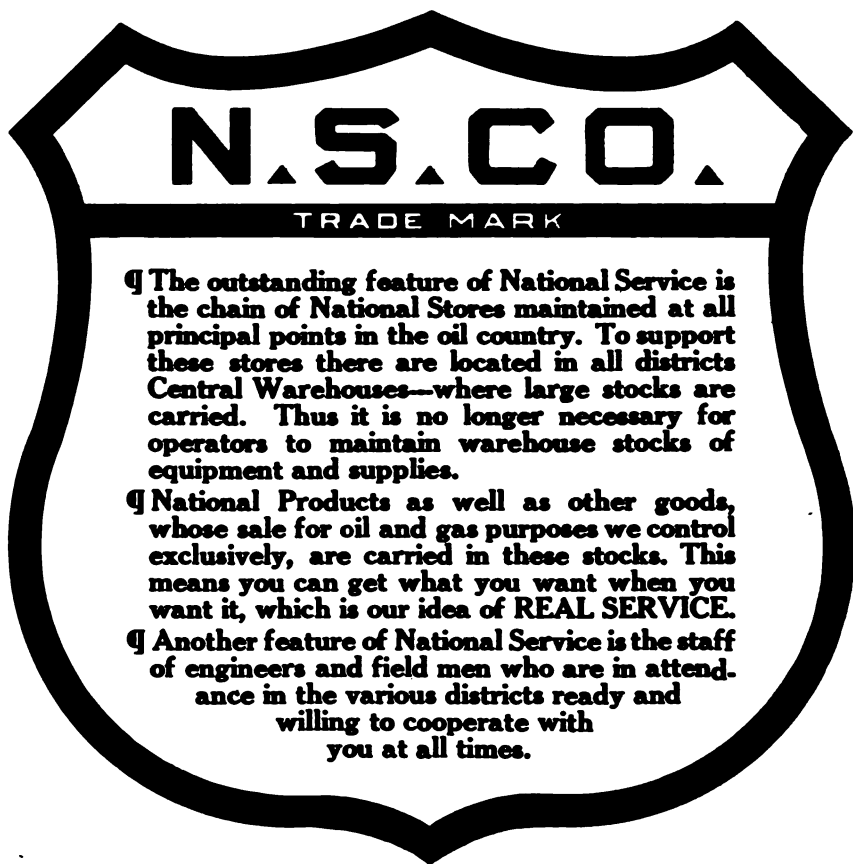
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811 New First National Bank Building

R. G. STONE, Editor

WM. H. THOMPSON, Associate Editor

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## New Yorker Reports on Ohio Commission

### Recommend It Be Given Additional Powers

The expert from New York employed by the joint legislative committee on administrative reorganization, Mr. Gaylord C. Cummin in his report, after reciting provisions of the law creating the commission says:

"The public utilities commission is not of the greatest possible benefit to the state for reasons entirely beyond its control. The fact that at present the rate making power for certain utilities in municipalities is vested in their respective legislative bodies and that franchises given by municipalities can not be modified, changed or controlled by the commission takes away much of its chance to give a maximum of service.

"The public is primarily interested in getting adequate service from the utilities by which it is served. It should get this service at the lowest price at which the service desired may be secured. It is quite evident that if not enough is paid for service the service will deteriorate, and if too much is paid the public is being exploited. Most franchises specify fixed rates during the life of the franchise. Each party to this form of contract is making a wager. The public bets that the rate specified is the lowest for which adequate service can be secured; the utility bets that the rate specified will earn them their costs plus a profit. The interesting thing about this wager is that whichever party apparently wins the public invariably loses either in too high rates or failure to get adequate service.

"It is also perfectly clear that costs of service can not remain constant through a long period of years, and this fact has been strongly emphasized by the happenings of the last few years.

### The Public Interest

"The cost of service is a matter of fact, not theory. It is true that the exact valuation and the exact depreciation can not be secured, but close approximations are possible, and will give a rate base fair to both public and utility. The utility is entitled to a fair rate of return on the capital actually and prudently invested, and unless it gets such return it is financially unable to give desired extensions and service. The public has never made anything by driving a utility into bankruptcy and never will. A square deal to both public and utility is to the public's best interest.

"It would appear that the fairest form of franchise would be one in

which fluctuating costs were considered so that the element of chance would be eliminated as far as possible and the public would continually get service at as low a price as was consistent with the service given. This leads naturally to the so-called service-at-cost plan, such as the well known 'Taylor Plan' used for street railroads in Cleveland and other cities. This plan still has a fundamental weakness in that no incentive is given the utility to cut its cost, but this can easily be corrected by allowing the utility a slightly greater return when rates are lowered. This is a form of franchise where neither side can win without the other side doing the same.

### **The Theory of Regulation**

"Regulatory bodies are often looked upon by the public as being placed in office as the advocates of the public only, but the entire theory of regulation falls to the ground unless the regulatory body preserves a judicial attitude and protects the interests of both public and utility. As indicated above, the basic interest of the public is best conserved by this attitude.

"A state public utility commission generally builds up a technical staff of engineers, accountants and statisticians, who become particularly skilled in the intricacies of determining fair rates. Are not the people in the municipalities best served by having rates controlled by such a body on the basis of cost of service rather than by hit or miss franchises? Again when a utility serves several adjacent municipalities is it possible for the several legislative bodies to secure fair rates and good service for their respective communities without reference to the utility as a whole?

"The public generally would have their interests better conserved by having all utilities under the control of a state public utilities commission, even to the extent of abrogating the rate and service standards contained in existing franchises.

### **Powers Should Be Increased**

"A less radical readjustment would provide that all new franchises must be passed upon by the state commission, perhaps providing that nothing but modified service at cost of franchises be allowed, that the elements entering into cost be finally determined, and that proper control be provided by the public utility commission. The public's interest would still be amply protected even in a case of a poor commission as the courts would still be available to prevent injustice.

"No positive recommendations along this line are made because it involves matters of public policy which must be decided by the people of the state.

"There is a bill now before the general assembly (1919) aimed to correct a weak spot in the present law which left the commission without power to suspend a rate schedule filed by certain utilities pending investigation as to the rates being reasonable. This correction should be made.

"This department is further charged with power to investigate accidents, to make and enforce service requirements of all kinds as well as to regulate rates, etc.

### **Recommendations**

"1. That the public utility commission constitute a separate department with three commissioners as at present.

"A public utility commission exercises both semi-judicial and adminis-

trative functions, and a several-headed control is justified. It is believed that such a commission should not be under the control of any department.

"2. That if it becomes necessary in any case for the commission to make a valuation of a utility, the cost thereof shall be shared equally by the utility and the political subdivision involved.

"3. That should any political subdivision or any utility request the commission to make a valuation of a utility the entire cost shall be paid by the petitioner.

"There is good reason for the state paying the expense of its semi-judicial and regulatory functions, even though reimbursed by a special tax on the utilities, as this is a service for the public at large in carrying out a public policy. A valuation of a utility is distinctly a service of special benefit to the parties involved and should be paid for by the recipients. There is sometimes a tendency for cities to ask the commission for a valuation chiefly because it is the only way to get it done for nothing, and is therefore a safe line of attack for a public utility baiter with his eye on political preferment. The remedy suggested above will discourage useless valuations. The commission has apparently prevented any abuse of this privilege by municipalities by refusing to make valuations, but the danger is there and a statute as suggested will relieve the commission of possible trouble. The state now appropriates annually for this service \$68,000 which might be saved.

"4. That the statutes upon which the commission is based be rewritten and codified into a public utility code.

"The basis statutes have been amended and added to from time to time and it is believed that they may be both shortened and simplified if entirely rewritten.

"Respectfully submitted,

"GAYLORD C. CUMMIN."

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### AN EVENING WITH MR. DOHERTY

An interesting report of an evening at the home of Henry L. Doherty is given by William C. Freeman in the first of his series of "Thrift" letters in the New York newspapers in connection with the Doherty thrift campaign. Mr. Freeman says, of his visit with Mr. Doherty, in part:

"I was in for a series of surprises that Saturday evening. The first surprise came when I walked up a narrow, carpeted stairway, one flight, and was ushered into a big living room, where my eyes quickly took in its comforts. There is one big settee, many easy chairs, two tables, several electric lamps, a grand piano, two talking machines, an Aeolian orchestrelle and a big pile of music rolls, three book cases filled with the kind of books that everybody should read, as I later learned, and the walls are covered with rare old prints and the floor with fine rugs. There is an open fireplace, two—one of those unusual things found in the city, but which always delight men who were raised in the country, as I was.

"In a few minutes dinner was served in a very quaint dining room, which has a coal stove sitting back in the wall at one end, and its red glow was most cheerful. There were no frills about this dinner. It was very plain but good—the kind of dinner served in the average American home, which is always good enough for anybody.

"I learned that he lives on Bridge street, not as a fad, but because it is near his place of business, to and from which he walks every day."

## New Gas Rates for Columbus Are Accepted -- Effective on July 12

After many months of offer, compromise and rejection, council Monday night passed an ordinance incorporating its last gas rate proposition of 45 cents for the first 10,000 feet, 55 cents for the second 10,000 feet and 65 cents for all over 20,000. The ordinance will continue three years in effect, from July 12, 1921, to July 12, 1924. The ordinance was accepted by L. B. Denning, vice president of the Ohio Fuel & Supply Co., and E. L. Taylor for the two Columbus distributing companies. This means that the long controversy is at an end.

### Chief Binding Clause

The chief "binding" clause in the new measure is the stipulation that the Ohio Fuel & Supply Co. must spend \$750,000 the first year of the contract drilling new gas wells and laying new pipe lines to get more gas for Columbus. And this company must file with the city clerk an account of all expenditures of this kind and their results. The other demand of the companies is that the distributing concerns shall file a combined quarterly statement with the city clerk showing the amount of gas delivered monthly during the previous three months by the producing company, and a statement showing the amount sold monthly during each quarterly period, domestic and industrial consumers separately.

Additional resolutions passed provide for the city's recognition of the present 30-cent rate, which will now enable the companies to turn over to the city treasury more than \$200,000 held in abeyance until this rate could be determined after its appeal to the Ohio utilities commission, which was made in 1916. The city also waives claim to 10 per cent of the gross receipts of the Federal Gas & Fuel Co.

The ordinance was one of two originally submitted, the other providing for an expenditure of \$750,000 in each of the three years by the producing company. L. B. Denning declared this was inequitable since the company had all along maintained its ability to pay out three-quarters of a million dollars only during one year. This ordinance did not come to a vote. No condition relative to amount of supply was incorporated, the philosophy as announced by Councilman Weinland, being to induce a better supply rather than demand it.

### Pipe Line Being Laid

It was pointed out that a majority of small consumers do not use more than 10,000 feet monthly, which keeps them within the 45-cent cost. Mr. Denning declared that the producing company was beginning immediately to increase their efforts to obtain gas. Twenty miles of pipe line are being laid into a West Virginia field now, he said, by a concern with which the company has contracted.

## The Small Gas Oven for the Gas Industry

A. MacARTHUR, The Koppers Company, Pittsburgh, Pennsylvania

It is generally recognized that coke made in by-product ovens is greatly superior for every purpose to that made in coal gas retort houses. While the cost of carbonizing coal has always been cheaper in ovens than in retorts, the size of the plants, their capacity and their large investment cost has made the method available only to the larger gas companies. In order that the smaller gas companies may have the advantages of coke oven efficiency, the "Small Gas Oven" has been designed.

There seems to be great reluctance on the part of some gas men to go strongly into the manufacture of coal gas, for the reason that they "do not want to go into the coke business." They want to make gas, and gas only—frowning on the production of tar, coke, and ammonia as necessary evils. Of course, these by-products are taken care of in the average retort house plant, but only for the reason that they have to be. If the plant includes water gas machines, it is profitable to have coke made within the plant to supply them. But we find in general that coal gas has, in a great number of plants, taken second place to water gas, and this is as it should be if we have only quantity production of gas in mind. A water gas machine is a piece of apparatus excellently adapted for the production of gas. It can be operated with comparatively few men, has a relatively low first cost, great flexibility, and is easily controlled. If we were to judge our gas making apparatus by these points alone, there would be no question but that the water gas process would be our choice. Contrasted with a water gas machine, a coal carbonizing plant of any type, whether it be horizontal or vertical retorts inclined slots or coke ovens, is a huge and cumbersome plant, requiring a large outlay of capital; a large labor force, and the handling of large quantities of raw material for the same gas production, so that to start with, the coal gas plant has to contend with a great handicap. There must be, then, some justification for the present coal gas installations, and you will agree the only justification is the fact that gas can be produced cheaper in this manner; and the reason that it can be made cheaper is due to the sale of by-products and coke. Then the plant which will give the maximum quantity of these products combined with a superior quality should be attractive.

In retort house plants there is made a coke which, when put on the market, is not favorably received. There has been little preparation of the product to make it attractive in appearance and due to its fragile structure, a large per cent is broken down to breeze by the time it reaches the point of consumption. The result is a dissatisfied feeling on the part of the customer, who in turn is not slow to tell the gas man about it. So we have the distaste on the part of Gas Companies to handle coke.

Suppose a plant is designed which, while giving the maximum gas possible for distribution, will at the same time produce a coke of the best quality. Then we remove the objectionable features of the marketing of this product and gain all the advantages of coke oven practice. These ad-



vantages are found in the "By-Product Regenerative Combination Gas Oven."

It is not claimed that this plant will get more B. T. U.'s out of a ton of coal than were originally there, but the value of the B. T. U.'s can be increased by changing the state or condition in which it is held. As an example, 1,000,000 B. T. U.'s in the form of coal is worth about 20 cents, while in the form of gas it will be worth from \$1.00 to \$3.00. In the form of coke this million B. T. U.'s is worth from say 25 cents up to 60 cents, so that it is the state or condition of the B. T. U.'s that we change, and in order to have a plant financially successful, we must produce this change economically and have the greatest number of B. T. U.'s released for sale in the form of the most valuable fuel which, of course, is gas.

Coal is dropped from the usual overhead storage bin into a larry car, which again drops the charge into the oven.

The regenerators below the oven are standard except as to length.

There is only one waste gas flue, however, and the fuel gas is supplied from one side only. The coke is pushed onto the coke wharf direct instead of using a hot coke car. These features are provided to reduce the cost of installation, and are possible by reason of the short oven. It will be apparent that the changes in design which have been made are such as to introduce no experimental or unproved features.

The combination feature of this design is of the most vital importance to the gas man. It permits of a flexibility found in no other type of coal carbonizing plant and is easily adjusted to the varying demands for gas.

Essentially this plant consists of chambers containing from 6.5 to 7.6 tons of coal. These chambers are heated with producer gas made in outside mechanical producers. Throughout the plant mechanical means wherever possible are used to reduce the labor needed.

We will now take a specific plant and look into operations, starting with the coal coming to the plant by either rail or water. This plant we will say has a maximum sendout of 1,500,000 cu. ft. of gas per day. With a fair grade of gas coal we may expect at least 10,500 cu. ft. of 575 to 600 B. T. U. gas, 12 gallons tar, 6 to 7 lbs.  $\text{NH}_3$ , 1,000 lbs. coke and 100 lbs. breeze from each ton of coal carbonized. To produce the maximum of 1,500,000 cu. ft. we will require 143 tons of coal necessitating an installation of 10—7.6 ton ovens working on a 12 hour coking schedule. The coal is crushed and delivered to an overhead storage bin and from there conveyed to the ovens in an electrically driven larry car. One man and helper can take care of the whole charging part. This operation may be so arranged that two shifts are all that are necessary.

The pushing of the coke is done by means of an electrically operated pusher, the doors of the ovens being handled by a man on each side so that our coke pushing crew consists of 3 men who may also be worked only 2 shifts out of the three.

We have the usual foreman necessary for the smooth operation of any unit. We have also a man known as the heater, who is responsible for the oven heating. This is an important job, as good uniform coke with maximum recovery of gas and by-products cannot be made unless uniform and even heating is provided. The foremen and heaters are 3-shift men. Just imagine a crew of 12 supplemented with a few laborers handling 143 tons or more of coal per day, and not having a really "mean" job for any of them.

Besides these men, we have the usual yard and repair men as well as a few men to operate the producers.

The battery is built out in the open and has not the usual dust, smoke and steam common to a retort house.

Coke is pushed from the ovens onto a coke wharf and is there quenched. One man looks after this quenching and feeding of coke from the wharf to a belt conveyor, which take the coke up to the screening station. Here the coke is divided into the different sizes such as furnace, foundry, domestic and breeze. The sizing of this coke is most important, and great care is taken of its proper preparation for market.

Recently the Vice President of one of the largest Gas Companies in the United States, operating both coke ovens and retort houses, told me that the coke made by the ovens would net to his company a dollar and a half more per ton than the coke made in the retort house. This was the case if the same coal were used in each, and all other conditions being the same. Further, he stated that the marketing of by-product oven coke caused very much less trouble to his company.

Now, figure what this means on a one million and a half plant producing say 70 tons of coke. At \$1.50 more per ton this item would amount to \$105 per day, or 7 cents a thousand saving on the net cost of gas.

Metallurgical coke broadens the coke market as well as increases the value of average ton produced, and while most plants mix coals to make this coke, it is being produced in a number of plants from straight high volatile coals.

By-product coke, having a greater density, weights from 15 to 30% more than retort house coke on the same moisture basis, and with its excellent preparation, makes a more valuable fuel for water gas generators. By its use the capacity of water gas machines has been increased 15%.

As domestic fuel it compares most favorably with anthracite coal and is preferred to anthracite by many people who have used both fuels. It is clean, contains less ash, and is easily handled in the home furnace.

In this plant the breeze is burned under the boilers, supplying all the steam requirements of the plant.

Tar from these gas ovens is of a superior quality, containing less free carbon and water and more of the valuable tar oils and acids than the usual retort house tar. This quality makes for higher returns and less trouble of disposal.

Ammonia is recovered as either ammoniacal liquor and concentrated, or in the form of ammonium sulphate. As sulphate, ammonia is in the most valuable form, as it can be stored without the usual losses and finds a market which will net to the company the greatest return. The sulphate plant has a higher investment cost, however, and in the case of small installations, this by-product is usually recovered as liquor.

To heat the ovens, a producer plant is used which consumes by weight in the form of the smaller coke from 240 to 280 lbs. of coke per ton of coal carbonized. The smaller coke has a lower market value and is used to good advantage in this manner.

The producer gas is cooled and cleaned before going to the ovens and the sensible heat recovered by raising steam sufficient in quantity to operate the producers and cleaning machinery.

By using cold producer gas, a very close adjustment of the gas burned

is obtained, as the regulation is made with iron cocks. Clean gas insures a long life to the ovens and flues, as well as efficient heat transfer, due to the fact that there is never an accumulation of ash and slag on the walls or flues.

The Efficiency of the self-contained producer plant will be found greater than a number of individual built-in producers, as the fuel bed is kept constant in thickness and temperature, resulting in a uniform quality of producer gas and lower underfiring.

The great problem of regulation of gas output has been a constant factor which has worked against the installation of a coal gas plant, and this is taken care of perfectly in the small gas oven plant.

To best illustrate this point, we will again refer to our 1,500,000 cu. ft. plant.

Suppose the demand fell to 1,000,000 cu. ft., how would we operate this plant?

If the coke market were good, we would reduce operations in the producer plant and continue to run the ovens at full speed, using the surplus 500,000 cu. ft. of coal gas to heat some of the ovens. This change would also release more coke for sale, as it would reduce the amount used in the producer plant. If, however, it was not desired to make excess coke, gas at the rate of one million cu. ft. per day could be made, still operating the producer plant to supply the underfiring, and slow the oven operation to a point where just the required amount of gas would be made. In this case we would be operating on say  $19\frac{1}{4}$  hrs. coking time. While it takes a few days to make radical changes in the coking time, it is a matter of a few minutes to change the oven firing from producer gas to coke oven gas, or vice versa, and this fact in a general way will take care of a varying demand. For instance, the season demand can be taken care of by a combination of these two methods, and the sudden daily demands met by varied operation of the producer plant. It might be well to state here that all or any portion of the battery may be heated with either gas. As an extreme case, we may imagine this plant operated on a 24 hour coking schedule using coke oven gas to heat the ovens. This would result in surplus gas for distribution of approximately 450,000 cu. ft. and shows here a coal carbonizing plant having the flexibility far beyond the needs of any gas company. And the plant may be operated any place between these two extremes.

Judging from the life of large coke oven installations, the ovens in this plant will have a life of 15 years without any repairs to oven brickwork, or from two to three times the life of the average retort setting.

The writer has purposely refrained from mentioning in this paper the present and probable future of carburetted water gas. It would seem that enough has been said and written on that subject to startle every man responsible for the prolonged production of this expensive gas. The alternate in making city gas is by the carbonization of coal, and this process is more profitable, only when the coal by-products are such that they command a reliable market, and a good price. It appears reasonable and logical, then, to urge the installation of such equipment as will produce the most and best by-products obtainable from coal.

## Method of Controlling Gas Well, Alkali Butte, Wyo.

By F. B. TOUGH, Bureau of Mines

An unusual job in controlling a gas well was executed on No. 1 well, Inland Oil & Refining Co., situated on the Alkali Butte structure, Fremont County, Wyoming. The work was done by the company in co-operation with the U. S. bureau of mines, and resulted in a fuel saving of \$6000 in one season and of a repair job estimated at \$15,000, or a total of \$21,000.

The well had an open flow of 6,000,000 cubic feet of gas per day with a rock pressure of 560 pounds per square inch. A string of 6¼-inch casing with a toothed shoe was set on the cap rock above the gas sand at 2481 feet. When the well was shut in, the gas worked out around both the 6¼-inch and 8¼-inch strings, breaking through the ground surface at several points under the derrick.

Casing troubles encountered while drilling made it unsafe to attempt moving the 6¼-inch string. Moreover, it was important from the standpoint of good management to make the gas from this well immediately available for fuel in other operations and, in addition, to save the gas from wasting. An ordinary mudding and cementing job would have necessitated shutting down this well for probably two months out of a very short operating season. For these reasons it was determined to mud the well, if possible, between the 6 and 8-inch strings by pumping mud fluid through the connection from the gas clamps. The gas clamps used were of ordinary construction with a side outlet, making them equivalent to a Braden-head. When the mud fluid was pumped through the gas clamp into the space between the two strings, it began to appear inside the 6¼-inch string. It apparently entered the well either around the toothed shoe or through a "line sawed" leak in the string and was blown out of the well as fast as it was pumped in.

In order to stop the leaks, about a half a gunny sack of finely chopped bull rope was fed with the mud between the casings as before. The hemp gathered around the valves of the mud pump to some extent, and it also stuck in the casing-head fittings a few times. An obstruction in the casing-head would be removed by permitting the well to "blow back" for a few seconds, and one in the pump valves, by removing the valves when necessary. In two days' time sufficient hemp and mud had been pumped into these strings to kill external and internal pressure. The well was shut in and allowed to stand over night. The next day, by opening and closing the master gate at intervals, and allowing the well to build up what pressure it would, it was found possible to blow the mud from the inside of the 6¼-inch casing. The chopped rope had presumably gathered around the shoe and also filled any "line sawed" places in the 6¼-inch casing, and was holding in place the mud fluid between the casings. The gas was thus made available for fuel, and the waste of gas by dissipation into the overlying formations and into the atmosphere was also prevented. It is interesting to note that after several weeks, during which period the mud had been afforded time to settle, a small amount of gas was observed leaking at the surface. About the same time it became possible to relieve the pressure by turning the well into the pipe line which had been laid to

supply the camp and three drilling wells. A pop valve placed in this line was regulated by experiment to pop off at a pressure slightly less than that pressure at which gas would begin to leak at the surface around the well. Because of the demand for gas the pop valve was seldom called upon to relieve the pressure. The wastage of gas became so small that, considering the need for fuel, it was deemed an act of true conservation to leave the well in that condition.

Conservative estimates indicate that an equivalent amount of coal for the three drilling wells and lease houses mentioned, would have cost about \$6000 for that season, not to mention the uncertainty of the coal supply, due to labor and hauling conditions. It is further estimated that this job saved a \$15,000 repair job on the well, besides making available a full crew for drilling another test well.

While this method is not recommended for use in a proven field, it was very satisfactory in the case described, where the economic conditions seemed to justify its use.

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### Some Facts About Drilling Gas Wells Which Will Interest You

A great deal is heard about a gas well being drilled here or there but very few realize how much work, planning and expense is involved in the operation.

As the first step the well is "located" by some one who makes a careful study of the geological foundation in the vicinity.

The derrick used in drilling deep wells contains as much lumber as a good sized house. Suppose the derrick is 84 feet high and 20 feet square at the base, and many of them are about this size, it would take 18 wagon loads to take out the timber for the derrick and good sized loads, too, for the timber weighs about 35 tons. Some of the timbers are very heavy. Take the walking beam for instance, in a derrick of this size it is 14 inches wide, 28 inches thick and 28 feet long, solid clear oak every inch of it. The beam has to be a stout one for every time it moves up it lifts 5000 pounds of cable and 4000 pounds of tools. A total load of four and a half tons. In addition to the 18 loads of timber for the derrick it takes about 16 loads of drilling equipment. Nor is this all, by the time the well is drilled down to, say about 2800 feet, there are about 8000 feet of pipe on the job. More yet. It takes 150 tons of coal to fire the boiler. Drilling operations are sometimes suspended because salt water is struck and it is necessary to case it off, and just the handling of the needed casing is an item amounting to several hundred dollars.

One of the most wonderful things to us is how a driller can tell by the feet of the cable, by its vibration and how it works, just about what is going on where the tools are hitting the rock 2800 feet or more below him. The well is drilled by the dropping of the string of tools which, as stated above, weigh 4000 pounds, and it is said that an expert driller can so regulate the force of the blow that he can crack a hickorynut without mashing it.

Sometimes there is trouble at the bottom of the hole. A drill becomes loose or the rope breaks. And then there is a fishing job which takes a lot of patience and no small degree of skill. Fancy trying to get hold of and bring up a drill stuck at the bottom of a hole, say about 2800 feet deep.

It's a great game, this putting \$15,000 into a hole in the ground. Heads you win, tails you lose in the effort to find the cleanest, most convenient fuel God has made.

## Making Power Out of Nothing

By ROBERT CROZIER LONG

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[Concluded from March Number]

The Erdoel Corporation resolved that the process should become commercial. During two years it sank millions of marks in experiments. Half the professors of chemistry were on its pay roll. What actually was being done was for purposes of war secrecy kept a profound mystery; but a few days after the armistice conclusion made secrecy needless the company announced that since the beginning of 1918 it had been producing out of brown coal on a commercial basis, lubricating, illuminating and heating oils, ammonia, benzene, and every one of the products that had hitherto been extracted from petroleum or from black coal.

In the main, the success was due to a generating process devised by a professor, Doctor Drawe, by which brown coal can be distilled to any stage of completeness. The chief feature is the use of foreign heat for the preliminary drying of the coal.

### A Growing Industry

Before 1918 the production cost, in gold, of oils from brown coal had been reduced about twenty-five per cent. Germany's military collapse potentially aided further developments by creating automatic protection. It brought the Reichsmark down to about an eighteenth of its gold value; and as the production cost of oil, in paper marks, cost only elevenfold, the oil is today cheaper than ever. In gold, brown-coal oils cost about seventeen per cent more than similar oils prepared from crude petroleum. But the brown-coal oils are commercially cheaper, because the freight is saved. If American oil in small quantities enters Germany today, that is not because it is cheaper but because the brown-coal rival is not so far sufficiently produced to supply all German needs.

The brown-coal distillation industry is taking enormous dimensions. At Muldenheim, near Halle, in the heart of the brown-coal country, is being set up the greatest distillation works in Europe, works which within five years of Germany before the war. This is a state concern, but no longer will be able to turn out oil-bearing tar equal to a sixth of the total production but business men and technicians from private corporations are in charge. Fourteen private corporations are distilling or are about to distill. Chief of them remains the pioneer corporation, the Deutsche Erdoel Corporation. Big brown-coal oil producers are the Riebeck Mining Company, the Werz-Weissenfels Brown Coal Company, and the Upper Silesian Coke Company. All these concerns own vast tracts of brown-coal land in Prussian Saxony; and some of them have the last unmined deposits of the rich bituminous brown coal called phrospisite, which yields as much as sixty-five per cent of tar. In addition are numerous corporations which distil brown coal for the sake of other tar products, and with these oil production is an incidental branch. The output is growing rapidly. By 1930, according to calculations of the Oil Producers' Association, which are based merely



upon existing or already constituted companies, the annual production will be at least a million tons, and with that Germany's whole need of oils, as measured by prewar standards, will be fully met.

The Erdoel Company, which began the movement, still leads it. Out of this concern will shortly be created a combine which for magnitude of production will throw into the shade the greatest of the oil corporations of Baku. The Erdoel Company is about to fuse with the other great prewar oil corporation, the Deutsche Petroleum Company. The Deutsche Petroleum Company is practically only a branch of the Deutsche Bank. Paradoxically, this combine draws its chief capital strength from its rival mineral oil. Both companies formerly imported and refined mineral oil, and the Erdoel Company today owns the oil fields of Wietze, in Hannover, the only natural source left in Germany after the peace. Until lately the Deutsche Petroleum Company, backed by the Deutsche Bank, owned a majority interest in the Rumanian Steaua Romana Corporation, the biggest European mineral-oil producer outside Russia.

This interest has now been sold to an Anglo-Franco-Rumanian syndicate; and the compensation received was 70,000,000 Swiss francs. In German currency that is round 800,000,000 marks. Counting old capital, the new combine will have a total capital of over a billion marks, which is six times as great as the capitalization of the Essen Krupps. Nearly all this money is to go toward production of brown-coal oils.

### **Railroad Electrification**

In brown-coal oil Germany has found a solution for the long-delayed problem of electrifying her railroads. Over ten years ago complete electrification was recommended on engineering and commercial grounds; but the reform was delayed by objections based on military apprehensions of the General Staff. These objections no longer apply. The new Muldenheim brown-coal oil distilleries are being set up in connection with an existing state railroad electrical power station. The coal shortage makes electrification imperative, for the railroads at present consume 17,500,000 tons a year. Without brown-coal oil, electrification is impossible, for coal-generated electricity would save only a small percentage of coal; and water power, except in the south, does not exist. With oil will be generated electricity, and with electricity trains will be propelled. The saving to the state will be enormous. The present state railroad coal bill totals 2,350,000,000 marks.

On the basis of general calculations of cost prepared by the Mulheim Coal Experimental Institute, it is estimated that the state railroad oil bill would not exceed 455,000,000 marks. Problems of capital and other expenditure of course need solution. But the freeing for industrial consumption of 17,500,000 tons of black coal would so enormously alleviate the coal famine, and would express itself in such an enormously increased output of more valuable goods than coal, that the financial advantage of driving the railroads with electricity generated from brown-coal oil is beyond doubt.

The solution of the general oil question for Germany will be an advantage at least equally great. Germany is practically without mineral oil. Of her two prewar sources, one, the oil field of Pechelbronn, in Alsace, has gone to France; and only the oil-bearing sands of Wietze remain. Their highest production of crude oil, reached in 1910, was 145,000 tons; today they produce 100,000 tons; and in fifteen years they will be exhausted. But Germany's normal need of oil, judged by the figure of 1912, is 1,025,000 tons. In

that year she imported 241,030 tons of lubricating and 795,011 tons of illuminating oil. Today her normal need is much greater; firstly, because she has lost so much of her full value coal; secondly, because of the extension of oil firing, of the Diesel motor, of motor-car transport. Import on the pre-war scale is impossible for all visible time. The import of 1912 cost her 104,235,000 marks in gold; since then the gold price of oil has everywhere risen enormously; and Germany would have to pay the increased gold price multiplied by eighteen which is the present depreciation of her currency against gold.

Elsewhere oil is superseding coal. The British monopoly of coal in Europe—which results in foreign countries being charged as much as 500 per cent over English native prices—is throwing most countries back upon oil. Norway has founded a big corporation which will establish oil depots all along her coasts; the Swedish Board of Trade last month recommended similar measures. “The Coal Age is over; the Oil Age has come,” says the chief of this institution. Applied to Germany, that means that without natural oils at home, and without the means of import, her resurrection as an industrial country is impossible. The conversion of otherwise worthless fuels into oil not only gives her a chance but promises to put her again in the matter of mechanical power at the head of the Old World.

### The Benzene Output

From brown coal Germany, in addition to heavy oils, has begun to extract benzene. This process, owing to the compulsion to deliver to France, is important; and it is doubly important because America, with her present world monopoly, will soon, according to European experts, be barely able to supply herself. The making of brown-coal benzene requires unusually high temperatures and pressures; but it was long ago theoretically and technically, though not commercially, possible. Two years back, brown-coal benzene cost in gold 250 per cent more than American petroleum benzene. Today the more bituminous brown coal, the **Schwelkohl**, is yielding benzene abundantly, and at a lower price than that at which Germany could import if the present import prohibition was removed. The Berlin chemist, Erwin Bluemner, who has helped to solve the problem, predicts that within a few years the annual output will reach 300,000 tons. But to produce this amount, he says, needs first legal restrictions on the direct consumption of brown coal.

From this the Berlin government shrinks. It declares instead that brown coal used for distillation, either of benzene or of the heavy oils, will get a bounty in shape of release from the present all-round twenty per cent coal tax. At present prices, six marks a kilo, the expected benzene output will present Germany with nearly two billion marks a year. It is a good return on the four or five millions paid to professors and experts by the Erdoel Corporation and other companies, since the General Staff's “command” stamped, so to speak, brown-coal oils out of an oilless earth.

Brown-coal possibilities, however, do not end there. The cheapness of the heavy oils, of benzene, ammonia, paraffin, pitch and other by-products, is an outcome of the discovery of practical uses for brown-coal gas. The gas is supplied to industrial works. The system of long-distance industrial delivery of brown-coal gas started in Silesia in connection with the coke-oven branch, which is in turn a branch of Silesian iron and zinc smelting. At first, inferior gas generated from all sorts of organic refuse was used for heating

the coke ovens; and the good coal gas was entirely freed for power development in industrial works that need a caloric value of at least 4000.

### **New Industrial Settlements**

Today brown-coal gas is used for coking. The next development was the supply of gas for direct industrial purposes. Several score of factories are being so run. The gas is so cheap that great industrial undertakings find it profitable to dismantle their mills, and to reestablish them in brown-coal centers—that is, they are able to do what they could not do if obliged to use the coal raw. The gas is cheap because the by-products—in reality, chief products—have a ready sale; the by-products are cheap because the gas is not wasted.

Out of brown-coal gas the Lower Silesian Gas Central is creating a new industrial settlement which will employ 150,000 men, all of whom would otherwise be workless owing to stoppage of their mills by the famine in black coal. The Julius Pintsch Corporation, whose gas plant lights half the railroad cars in Europe, has begun the erection of brown-coal gas works in direct connection with electric-power stations. The whole electrical-power plant of Lichtenberg, an outlying part of Berlin, has been so reconstructed. The gas retorts, the tar and oil-saving plants and the boiler furnaces are all practically one vast machine.

Since March last, brown-coal gas has been used for heating Siemens-Martins furnaces; and it is being used experimentally for driving gas turbines. Through it the economically efficient gas turbine, the vain dream of engineers since the first patent was taken out by Barber in England, a hundred and thirty years ago, has become a fact. The development of the gas turbine was long checked by high-temperature troubles. The tremendous speed—up to three-quarters of a mile a second—of the hot gases dealt with metal parts exposed to it as remorselessly as the blast from a sixteen-inch gun deals with the barrel rifling. The Holzwarth turbine, now being manufactured in Germany, has finally overcome this difficulty—so Germans claim. But commercial use of the turbine demands cheap gas. This gas comes from brown coal.

Prolonged tests, reports Professor Stauber, a great expert on this matter, prove that electrical generation costs per kilowatt hour only 19.5 pfennings with the gas-reciprocating engine—a particularly efficient machine—and 22.7 pfennigs with the steam turbine.

Naturally the realization of this fact in everyday industry is no easy problem, as the vast new capital needed for turbine manufacture must be taken into account. But future industrial undertakings and future power stations will profit from the double fact of cheap gas and an efficient gas turbine; and again Germany, through mere possession of and scientific exploitation of brown-coal, will become mistress of new mechanical and ultimately of new political power.

### **New Vistas of Utility**

But there are further vistas. The paraffin extracted from brown coal has become precious since it was discovered that it is converted by oxidation into fatty acids. This process, reports Professor Pschorr, newly appointed rector of Berlin's famous technical school, is relieving the soap famine which harries all Central Europe; and it may even later relieve the fam-

ine in edible fats. Another professor, Dr. R. Hoffmann, tells how methyl alcohol is being prepared in large quantities from brown coal.

A third professor, Doctor Lufschitz, chief of the Dresden Material-Proofing Department, is making excellent cement out of brown-coal ash, without the addition of any binding matter. This cement is used for house-building; and thus the *circulus vitiosus* by which miners' housing shortage causes coal shortage and coal shortage causes housing shortage is partly broken, and the solution of the black-coal problem is brought into sight.

Meantime Germany has the prospect of enormously increasing her national wealth. An expert of the Mulheim Coal Experimental Institute declares that within a few years the value of the whole brown-coal output will be increased tenfold, and that ultimately a twenty or even forty fold increase may be attained. The present value of Germany's output of 110,000,000 tons at the legal maximum price of round sixty paper marks a ton is 6,600,000,000 marks. Under the old processes 50,000,000 tons would be consumed raw, raw, selling for 3,000,000,000 marks; and the remaining 60,000,000 tons, which would be converted into briquettes—yielding only 25,000,000 tons—would sell for 5,000,000,000 marks. Thus the total value of the brown coal if consumed in the old way is round 8,000,000,000 marks. The calculations of the Mulheim Institute show that distillation of all the 110,000,000 tons would yield products worth 78,000,000,000 marks. This calculation leaves out of account the inferior coke, and assumes distillation only to the stage of intermediates. The value of the drugs, dyes and solvents in the ultimate processes is not counted. If full distillation is practiced, and if the water gas produced by steaming from the coke is turned to industrial use, the total value might rise to a hundred billions. But that is not the limit. The doubling of the brown-coal output within a few years is certain and as the processes now being perfected will probably become even more economical, the possibilities of wealth creation have practically no end.

## Supervision of Leasing Act

Supervision of the leasing act of February 25, 1920, known as "an act to promote the mining of coal, phosphate, oil, oil shale, gas and sodium on the public domain," was placed by the secretary of the interior under the immediate direction of the bureau of mines. The bureau, up to the present time, has not been able to care adequately for the work, which has expanded until the present oil production from government lands in California and Wyoming will total 14,000,000 barrels annually. Prospecting permits for drilling also have been granted in 11 other states and Alaska. Seeing the need of more adequate supervision of this production, Congress, in the closing days of its last session, allotted to the bureau of mines \$60,000 to properly organize and carry on this work until July 1, 1921.

### Oil and Gas.

Operating regulations to govern the production of oil and gas have been issued. According to these regulations, it shall be the duty of the oil and gas supervisor and his deputies to visit leased lands where operations

for the discovery and production of oil and gas are conducted and to inspect such operations with a view of preventing waste of oil and gas, damage to formations or deposits containing oil, gas, or water, or to coal measures or other mineral deposits, injury to life or property, or economic waste; and to issue instructions which will prevent such waste.

Lessees under these regulations shall provide tanks suitable for containing and accurately measuring the crude oil produced from the wells and shall furnish the supervisor with accurate copies of all tank tables. The quality of oil produced is also determined by the supervisor. The royalties payable under these leases depends both on amount and quality of the oil produced, ranging from 12½ to 25 per cent for all oil produced of 30° Baume or over and from 12½ to 20 per cent for that of less than 30° Baume.

F. B. Tough, petroleum technologist of the bureau of mines, has been made supervisor of Oil and Gas Operations, with headquarters in the Customhouse Building at Denver, Colo., and will report direct to the chief petroleum technologist in Washington. District engineers and deputy supervisors, together with oil gaugers and clerks, have been placed at Casper, Wyo., Winnett, Mon., Bakersfield, Cal., and Shreveport, La., reporting to the supervisor at Denver.

#### Other Leases.

Leases dealing with coal, phosphate, oil shale and sodium as they involve mining operations, both underground and surface, are under the immediate technical charge of George S. Rice, chief mining engineer of the bureau. At the present time, the principal mining operations are in coal, although leases have been applied for covering the other mentioned minerals. This part of the work will be handled in the field for the present by a district mining supervisor, with offices in the Customhouse Building at Denver.

Operating and safety rules and regulations for coal mining operations under the terms of the act have been prepared and approved by the secretary of the interior and are now in process of publication. Similar regulations covering the special mining conditions of other minerals are now in course of preparation.

Permits may be issued to include not more than 2560 acres of land wherein the deposits belong to the United States and are not within any known geological structure of a producing oil or gas field or a similar amount of land containing deposits of coal, sodium, or phosphates and not to exceed 5120 acres of land containing oil shale deposits. The boundaries of the geological structures involved in the leases are determined by the geological survey and the control for permits and leases was entrusted by the secretary of the interior to the general land office.

In the application of the Newark Natural Gas and Fuel Company to withdraw service from all consumers in and about Newark, Ohio, the city solicitor and counsel for the company joined in asking the commission to dismiss the matter.

The company filed this application after vainly endeavoring to secure relief from the 33c per M. cu. ft. rate ordinance. The matter has been adjusted by the city amending the rate contract to institute the upward sliding scale, which begins with 45c per M. for the first 5 M. cu. ft.

The case was dismissed without prejudice.

# Who's Who In The Gas Business

A NATIVE OHIOAN



**MR. BEMAN G. DAWES**  
President The Pure Oil Co., Columbus, Ohio

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## William Young Cartwright

The death in Philadelphia on March 21st of William Young Cartwright, vice president of the Columbia Gas and Electric Company, came as a shock to his friends and acquaintances.

Mr. Cartwright came to Cincinnati when the Leach interests acquired the control of the Columbia Gas and Electric Company from Archibald White. He was recognized as a foremost authority in the operation of natural gas properties. He was made vice president and general manager of the Columbia Gas and Electric Company in charge of operations and held the same title and position with the Union Gas and Electric Company, the Cincinnati subsidiary of the Columbia company.

Much of the success of the Columbia company was attributed to Mr. Cartwright's management and foresight. Mr. Cartwright was with the East Ohio Gas Company in his early business career. After leaving the East Ohio Gas Company he was president of the Hope Natural Gas Company at Clarksburg, W. Va., which position he held seven years. For 20 years he was connected with the Standard Oil interests. He left the Hope company to take the position with the Columbia company.

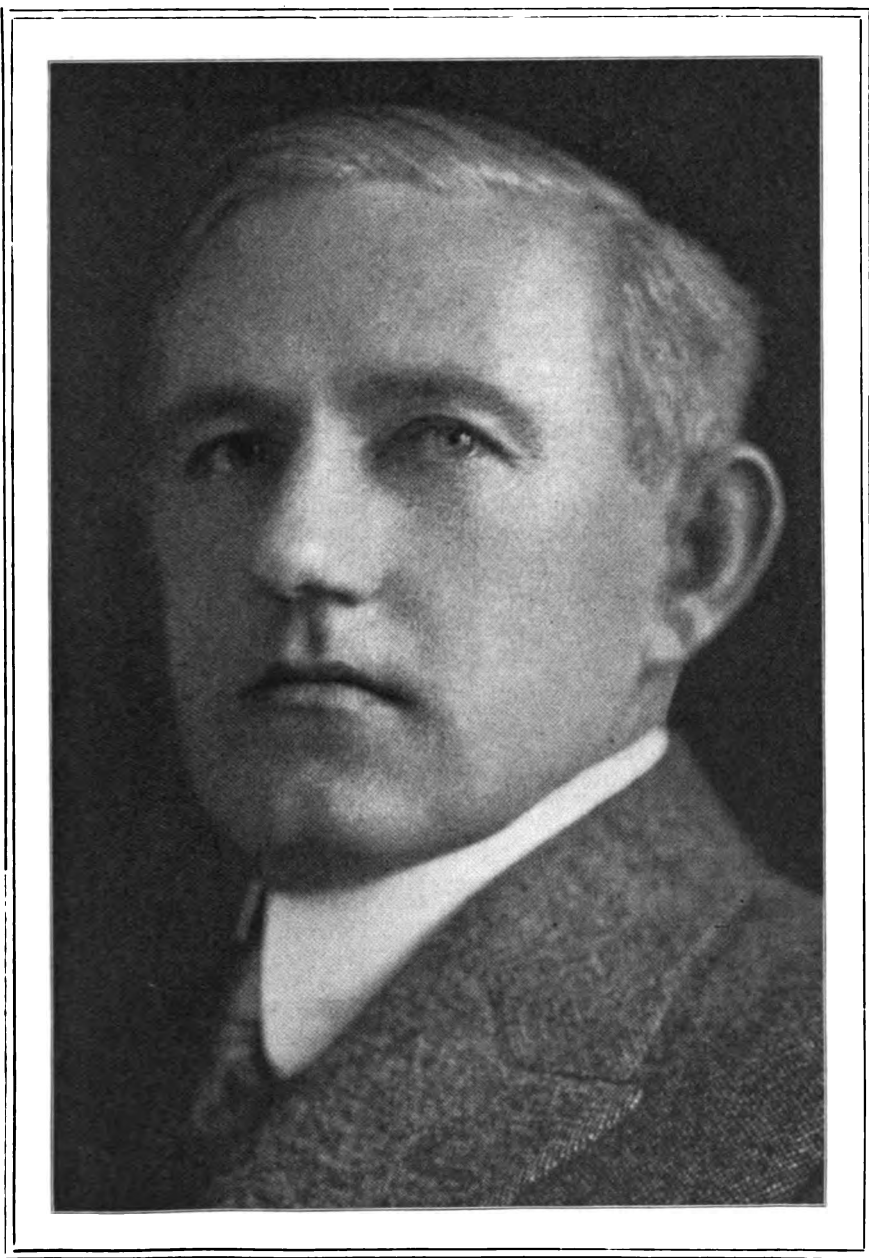
Mr. Cartwright was one of the organizers of the Paragon Oil Company and had served as chairman of the board of directors since the formation of that company. He was vice president and general manager of the United Fuel Gas Company of Charleston, W. Va., and a director in the Island Oil and Transportation Company of New York.

Mr. Cartwright is survived by his widow and five children, two brothers, a sister and his mother.

He was a member of the Queen City Club, the Cincinnati Country Club, the Natural Gas Association of America and the Ohio Gas and Oil Men's Association.

Mr. Cartwright was born at Uniontown, Pa., 47 years ago.

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**WILLIAM YOUNG CARTWRIGHT**



**List of Firms Having Exhibits at the Cincinnati Convention of the  
Natural Gas Association of America, to be Held May 16, 17,  
18 and 19, at the Cincinnati Music Hall.**

1. National Supply Company, Toledo, Ohio.
2. Ludlow Valve Mfg. Co., Troy, N. Y.
3. H. A. Fisher, Pittsburgh, Pa.
4. Northrup Equipment Co., Parkersburg, W. Va.
5. Clark Brothers Co., Olean, N. Y.
6. Gas Engineering & Construction Co., Pittsburgh, Pa.
7. Westcott Valve Co., Seneca Falls, N. Y.
8. Union Gas & Electric Co., Cincinnati, Ohio.
9. Geo. Hake, Cincinnati, Ohio.
10. Estate Stove Company, Hamilton, Ohio.
11. Manhattan Rubber Mfg. Co., Pittsburgh, Pa.
12. C. & G. Cooper Co., Mt. Vernon, Ohio.
13. N. C. Davison Gas Burner & Welding Co., Pittsburgh, Pa.
14. Pittsburgh Meter Co., East Pittsburgh, Pa.
15. C. M. Heeter Sons & Co., Butler, Pa.
16. Ohio State Stove Mfg. Co., Columbus, Ohio.
17. United States Rubber Co., Pittsburgh, Pa.
18. Jarecki Mfg., Co., Erie, Pa.
19. "Natural Gas Industry," Buffalo, N. Y.
20. Welsbach Company, Gloucester City, N. J.
21. Eclipse Stove Division, Geo. D. Roper Corp., Rockford, Ill.
22. Parkersburg Rig & Reel Co., Parkersburg, W. Va.
23. Wm. M. Crane Company, New York City.
24. Metric Metal Works, Erie, Pa.
25. Pittsburgh Valve, Foundry & Cons. Co., Pittsburgh, Pa.
26. Macwhyte Company, 420 First Ave., Pittsburgh, Pa.
27. Oil Well Supply Company, Pittsburgh, Pa.
28. Reznor Mfg. Company, Mercer, Pa.
29. Sprague Meter Company, Waterbury, Conn.
30. Chapman Valve Mfg. Co., Pittsburgh, Pa.
31. Rosendale-Reddaway Co., Newark, N. J.
32. S. R. Dresser Mfg. Co., Bradford, Pa.
33. Cleveland Gas Meter Co., Cleveland, Ohio.
34. Reliable Stove Company, Cleveland, Ohio.
35. New York Belting & Packing Co., New York City.
36. Frick & Lindsay Co., Pittsburgh, Pa.
37. Gilfillan Machine Works, Ebenezzer, N. Y.
38. B. F. Goodrich Co., Akron, Ohio.
39. Lee C. Moore Company, Pittsburgh, Pa.
40. Precision Instrument Co., Detroit, Mich.
41. Western Gas Construction Co., Fort Wayne, Ind.
42. Upson Walton Company, Cleveland, Ohio.
43. Stokes Deep Well Tool Co., Inc., Shreveport, La.
44. National Tube Co., Pittsburgh, Pa.
45. Bristol Co., Waterbury, Conn.
46. Walker & Pratt Co., Boston, Mass.
47. Dayton Pipe Coupling Co., Dayton, Mass.
48. Foxboro Co., Foxboro, Mass.
49. Continental Supply Co., St. Louis, Mo.

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|---|--|
| 50. A. Leschen & Sons Rope Co.,<br>St. Louis, Mo. | 54. Worthington Pump & Machine<br>Corp., Buffalo, N. Y.      |
| 51. Chaplin-Fulton Mfg. Co.,<br>Pittsburgh, Pa.   | 55. International Tank & Equip-<br>ment Co., Columbus, Ohio. |
| 52. General Gas Light Co.,<br>New York City.      | 56. Bovaird & Seyfang Mfg. Co.,<br>Bradford, Pa.             |
| 53. Garlock Packing Company,<br>Palmyra, N. Y.    |  |

**List of Appliances Donated by Different Manufacturers Which Are to Be Given Away at the Cincinnati Convention of the Natural Gas Association of America in May in a Campaign to Boost the Sale of Appliances Among the Natural Gas Companies of America.**

The show will be open to the public from 3 o'clock in the afternoon until 10:30 at night, May 16, 17, 18 and 19, and this material will be offered to them as an inducement of attendance by some novel scheme.

**Welsbach Company, Gloucester, N. J.**

Two 8-glower Welsbach gas heaters with self-lighters.  
Two No. 1608 Welsbach semi-indirect fixtures complete.

**The Kompak Company, New Brunswick, N. J.**

One No. 25 special two-burner natural gas Kompak water heater.

**The Ohio State Stove & Mfg. Co., Columbus, Ohio.**

One Royal Ossco porcelain trimmed range.  
One Packer's Duo radiant heater.  
One Packer's Duo Bunsen heater.  
One Royal Ossco front burner reflector heater.

**Germer Stove Company, Erie, Pa.**

One radiant home combination gas and coal range, with white enamel splashers.  
At least three Germer gas heaters.

**Reznor Manufacturing Company, Mercer, Pa.**

Six Reznor room heaters.

**Geo. D. Roper Corporation, Rockford, Ill.**

Two Eclipse gas ranges with patented oven control.

**General Gas Light Company, Kalamazoo, Mich.**

Six radiant fires.

**Walker & Pratt Mfg. Co., Boston, Mass.**

One 36-inch Crawford cabinet gas range with adjustable folding broiler.

**Estate Stove Co., Hamilton, Ohio.**

One Estate range.  
Six Sunburst heaters.

**Wm. M. Crane Company, New York, N. Y.**

One smooth top range—any size.  
144 "Vulcan" gas toasters.

**J. H. Grayson Mfg. Company, Athens, Ohio.**

Six art black statuary bronze and brushed brass gas fires.

**Reliable Stove Company, Cleveland, Ohio.**

One Reliable range.

## Courts and Public Utilities Commissions

Mr. J. W. Herrold of Athens, Ohio, formerly in the department of workshops and factories, industrial commission, is the new superintendent of rates of the public utilities commission, taking the place of Daniel Butler of Toledo, resigned.

### **Commissions Have Right to Inquire Into Contracts Between Public Service Corporations**

Oklahoma Supreme Court

"Application Oklahoma Gas & Electric Company and others for a writ of prohibition to prevent the Corporation Commission from inquiring into contracts entered into by the plaintiffs and the Oklahoma Natural Gas Company for furnishing natural gas upon a percentage basis to Oklahoma City and several other cities and towns. Application for writ is denied. Action arising from application of the Oklahoma Natural Gas Company to the Corporation Commission asking for establishment of a city gate rate instead of a percentage contract basis. Application before commission still pending.

"The syllabus of the court states the main points in the case as follows:

"'Public Service corporations have a right to enter into contracts between themselves, but such contracts are subject to the control and supervision of the Corporation Commission, if they are unconscionably oppressive, and impair the obligation of the public service corporation in the discharge of their duty to the public.'"

### **Commissions Precede the Courts.**

The West Virginia court of appeals holds, *State v. Bluefield Waterworks & Improvement Co.*, (103 S. E. 340) that the question whether rules, regulations and practices of a public service corporation subject to the provisions of the public utilities act making it unlawful for public service corporations to make or give any undue or unreasonable preference or advantage to any particular person, firm, or corporation, or to subject them to any undue or unreasonable prejudice or disadvantage, adopted by the company to govern its dealings with its patrons, are unreasonable or unduly discriminatory, is primarily within the competency of the public service commission, and not subject to judicial supervision until that body has had an opportunity to exert its delegated administrative functions.

### **Again Holds 80-Cent Gas Law of New York Confiscatory**

The 80-cent gas law was again held confiscatory by A. S. Gilbert, special master, in the rate cases of the Central Union Gas Co. and the Northern Union Gas Co., both subsidiaries of the Consolidated Gas Co.

In his report to the United States district court for the Southern District, the master recommends that the law be declared illegal and void, because it is in contravention with the provisions of the federal constitution.

The two companies are now charging a rate of \$1.10 a thousand feet, granted them on the temporary injunction by the court. Should the findings and recommendations of the special master be confirmed by the court, the companies are expected to get a rate of between \$1.25 and \$1.40, plus a monthly service charge.

## Consumption of Fuel Oil and Gas by Public Utility Power Plants in 1920

According to the Division of Power Resources, U. S. Geological Survey, public utility power plants in the United States consumed in the production of electricity during the year 1920, 13,080,000 barrels of fuel oil, as against 11,050,000 barrels in 1919, an increase of 18.4 per cent. Gas was consumed in the amount of 24,300,000,000 cubic feet in 1920 as compared with 1919; 13.6 per cent increase. Consumption of coal increased 6 per cent during 1920. Of the total production of 43,900,000 kilowatt hours 37.6 per cent was generated by water power, 62.4 per cent by fuel power.

In the use of fuel oil for the production of electricity California led the country with a consumption for the year of 5,625,334 barrels, or 43 per cent of the total; Texas came next with a consumption of 2,882,770 barrels, or 22 per cent. Other states in which public utility power plants consumed fuel oil in large volume were Florida, Kansas, Louisiana, Missouri, Oklahoma and Rhode Island. Consumption in the last named state was only 69,340 barrels in the first half of 1920, but during the second half 251,598 barrels were consumed.

Consumption of fuel oil by public utility power plants of the United States in 1920 by quarters, was as follows:

### Consumption of Fuel Oil by Public Utility Power Plants.

State.	(In Barrels.)				
	Jan.- March.	April- June.	July- Sept.	Oct.- Dec.	Totals.
Alabama .....	18,208	21,426	27,224	29,805	96,663
Arizona .....	57,542	61,937	61,132	57,906	238,517
Arkansas .....	12,870	17,519	31,810	21,617	83,816
California .....	1,501,810	1,240,148	1,744,636	1,138,740	5,625,334
Colorado .....	320	392	390	234	1,336
Connecticut .....	10,521	7,128	4,601	3,430	25,680
Delaware .....	.....	30	.....	.....	30
Dist. of Col. ....	.....	.....	.....	.....	.....
Florida .....	185,543	152,920	134,414	158,033	630,910
Georgia .....	74,673	80,962	81,494	74,850	311,979
Idaho .....	30	10	.....	.....	40
Illinois .....	1,302	815	702	745	3,564
Indiana .....	975	1,245	982	1 229	4,431
Iowa .....	1,739	1,809	2,976	3,065	9,589
Kansas .....	244,126	183,497	190,182	203,558	821,363
Kentucky .....	793	675	1,048	710	3,226
Louisiana .....	131,010	117,186	116,554	123,647	488,397
Maine .....	4,033	9,029	9,280	8,915	31,257
Maryland .....	8	14	47	35	104

Massachusetts .....	15,228	22,510	49,900	64,991	152,629
Michigan .....	410	259	303	724	1,696
Minnesota .....	1,552	1,282	1,435	1,108	5,377
Mississippi .....	27,631	29,552	28,168	24,472	109,823
Missouri .....	188,734	98,172	90,729	71,202	448,837
Montana .....	77	147	633	578	1,435
Nebraska .....	35,603	24,423	10,956	8,994	79,976
Nevada .....	1,917	510	510	.....	2,937
New Hampshire .....	49	100	10	27	186
New Jersey .....	340	239	273	321	1,173
New Mexico .....	785	1,978	2,528	2,067	7,358
New York .....	2,376	3,272	11,255	22,515	39,418
North Carolina .....	102	291	341	475	1,209
North Dakota .....	551	772	448	502	2,273
Ohio .....	1,805	1,745	1,683	1,650	6,883
Oklahoma .....	175,400	61,125	32,650	76,418	345,593
Oregon .....	6,207	4,773	6,440	6,632	24,052
Pennsylvania .....	385	650	6	313	1,354
Rhode Island .....	27,816	41,524	128,086	123,512	320,938
South Carolina .....	.....	.....	35	70	105
South Dakota .....	7,409	5,067	5,384	6,863	24,723
Tennessee .....	73	75	246	.....	394
Texas .....	701,627	669,379	741,575	770,189	2,882,770
Utah .....	.....	.....	.....	.....	.....
Vermont .....	6,020	1	5,343	1,166	12,530
Virginia .....	380	460	399	1,273	2,512
Washington .....	37,875	19,910	48,285	35,453	141,523
West Virginia .....	143	116	165	150	574
Wisconsin .....	1,636	1,451	768	827	4,682
Wyoming .....	26,596	19,566	16,609	19,719	82,490
Totals .....	3,514,230	2,906,091	3,592,635	3,068,730	13,081,686

Consumption of gas by public utility power plants during 1920 totaled 24,298,790,000 cubic feet, of which 1,009,590,000 cubic feet or 4.1 per cent (practically all consumed in Ohio) was artificial. Of the stated total amount of gas consumed, 79.2 per cent was used in five states: Oklahoma, 5,119,440,000 cubic feet; Ohio, 4,931,531,000; West Virginia, 3,538,229,000; California, 2,970,956,000, and Arkansas, 2,698,740,000. Total consumption by quarters for last year was as follows:

#### Consumption of Gas by Public Utility Power Plants.

1920.	Cubic Feet.
January-March .....	4,187,262,000
April-June .....	6,098,278,000
July-September .....	7,913,310,000
October-December .....	6,099,940,000
Total .....	24,298,790,000

## Pending Legislation Affecting the Gas and Oil Industries

- Arkansas**      **Senate Bill No. 502**—is “a bill to conserve natural gas.”
- West Virginia**    **House Bill No. 461**—introduced by Flynn, authorizes the public service commission to impose a surcharge in excess of the maximum or base rate and quantity established by them as to the quantity of gas used by persons, corporations, etc., and the rate per thousand feet to be paid by them, but such surcharge for excessive or extravagant use in excess of the amount prescribed for any one month shall not exceed 50 per cent above the maximum or normal base rate. The funds collected shall be paid into the treasury for the benefit of the public schools. The bill recites that its purpose is to conserve and prevent waste and extravagant use of natural gas.
- Ohio**            **House Bill No. 321**—introduced by Robinson, to amend section 614-44 of the General Code relating to the power of municipalities to fix rates, etc.  
**Senate Bill No. 187**—by Burke, to provide for right of appeal to the courts by citizen tax payers in certain cases involving the interests of public service corporations, public contractors and citizens.  
 The New Philadelphia Chamber of Commerce at a meeting Friday noon, passed a resolution protesting against the provisions of House Bill No. 197, limiting the use of natural gas.
- Texas**            **House Bill No. 305**—introduced January 28th by Harrison, requires every one owning, controlling, managing or leasing any oil well within the state to make quarterly reports showing the total amount of oil produced and the average market value thereof, and requiring the payment of a quarterly occupation tax equal to 1½ per cent of the total amount of oil produced during the quarter. One-third of the money shall be paid to the county in which said oil or gas is produced.

### WOULD EXEMPT GAS PIPE LINES FROM TAX

Exemption from taxation for ten years of pipe lines distributing natural gas within the state of Louisiana is provided for in an ordinance introduced by John R. Hunter, of Rapides parish, in the constitutional convention.

The ordinance is to encourage the construction of a pipe line system that will connect all the populous centers in the state with the gas fields. The ordinance, which has not yet been acted on, reads:

“There shall be exempt from all taxation for ten years from date of completion the capital stock and property of all corporations constructing, owning and operating, within the state, pipe lines for the distribution of natural gas to be utilized for industrial and domestic consumption, within the state, provided such line is completed within five years from January 1, 1921, and that within such term not less than 100 miles of such line is constructed and operated within the state.”

## Ohio is Somewhat Like the Man Who Lost His Horse

In one respect the state of Ohio is somewhat like the man who bought a new lock for his stable door after a valuable horse had been stolen.

Nothing has been stolen from Ohio, but the people of Ohio have been rapidly losing something that is of great value to them and, finally realizing what this loss will mean to them in dollars and inconvenience, are taking steps to conserve what is left.

There is no argument over the fact that natural gas in all of the known fields from which Ohio may draw its supply, is rapidly declining. Figures, compiled by federal and state experts who have made surveys of the natural gas situation, tell the story plainly.

Most of the officials of Ohio's municipalities are convinced it will not be long before Ohioans must resort to artificial gas, much more costly and of only half the heating value of natural gas. As a result, municipal legislative bodies throughout the state are adopting measures aimed to conserve the remaining supply of natural gas.

In most instances, these municipalities are increasing the rates for the natural product on an upward sliding scale plan, thereby eliminating the large user of gas, who uses it for heating his house in cold winter weather, and deprives the small user of gas sufficient for cooking and other ordinary domestic purposes.

Ohio is one of the few states that have been fortunate in the matter of natural gas. Only ten per cent of the people of the United States have been so situated that they might have access to this cheap and convenient fuel. Ohio has enjoyed its benefits for years.

There are seven large producing natural gas companies in Ohio. The East Ohio Gas Company, serving Cleveland and northeastern Ohio; the Northwestern Gas Company, serving Toledo and vicinity; the Ohio Fuel Supply Company, serving central Ohio; the Logan Natural Gas & Fuel Company, serving southern, central and western Ohio; the Manufacturers Light and Heat Company, serving southeastern Ohio; the Columbia Gas Company, serving Cincinnati and vicinity, and the Medina Gas & Fuel Company in north-central Ohio.

Of these seven companies, the first six have pipe lines into the West Virginia fields, and draw probably 75 per cent of their supply therefrom. In addition to the six Ohio companies drawing from West Virginia, many more lines drain these fields from the states of Pennsylvania, New York, Maryland and Kentucky, as well as the local demand in West Virginia.

In a hearing before the Ohio Public Utilities Commission, the testimony of I. C. White, for twenty-two years state geologist of West Virginia, and J. A. Bownocker, professor of geology at Ohio State University and state geologist of Ohio, was taken. These two men had just completed a survey of the West Virginia fields and their testimony was in substance:

That unless new fields were discovered, which was thought improbable, from 75 per cent to 90 per cent of the gas deposits in Ohio is gone and that three-fourths of the known gas territory in West Virginia is exhausted.

When Ohioans are compelled to turn to artificial gas for cooking, water heating and lighting purposes, they will pay more than twice as much as they now pay for the natural product. It takes 2,000 cubic feet of artificial gas to do the work of 1,000 cubic feet of natural gas. Boston has just increased the price of artificial gas to \$1.40 a thousand cubic feet. In other words, Boston is paying \$2.80 for 2,000 feet of artificial gas that has the same heating value as 1,000 feet of natural gas that Ohioans are being supplied with for 50 or 60 cents.

## Notes of the Industry

### Standard Oil Production Gained 5% in 1920

The Standard Oil Company of New Jersey produced 31,200,000 barrels of crude oil in 1920, as against 20,000,000 barrels in 1919, a gain of 56 per cent, according to Vice President F. D. Asche, who stated at a recent meeting of the administrative heads of the company that the total amount of crude oil run through the company's refineries in 1920 was 17 per cent larger than in 1919, the jump being due to the fact that an increased refinery capacity amounting to 57,000 barrels was available at five of the company's refineries. These did not include the new plant at Charleston, S. C., nor the plant of the Humble Oil & Refining Co.

The company's production of 31,200,000 barrels was obtained in the various oil fields of the world where the company's various subsidiaries operate and includes oil production from its natural gas properties. Included among these subsidiaries are the International Petroleum Company, Ltd., operating in South America; the Transcontinental Petroleum Company of Mexico, Romano-Americana of Roumania and the domestic subsidiaries. Of the average daily production of 85,246 barrels attained, the largest contributors were the Standard Oil Company of Louisiana and the Transcontinental. This compared with 54,794 barrels in the year previous.

In explaining how the Standard Oil Company will operate in France, as well as in French colonies and markets, Mr. Asche said that three companies have been formed, including a distributing company, which will introduce the bulk delivery of refined oil and gasoline to the

French public; a company for the sale of fuel oil, and a producing company for operation in France as well as French colonies and mandates.

The Standard Oil Company has also organized a new company in Finland, according to Mr. Asche, and will market directly in that country hereafter. It also has acquired a substantial interest in operating companies in Poland and is investigating possibilities of establishing marketing organizations in the Slav states.

At the close of 1920 the company's tanker fleet consisted of 47 steamers with a total deadweight capacity of 479,502 tons, all of which fly the American flag. In addition to this its various subsidiaries have substantial tanker tonnage under foreign registry. Nine additional tankers aggregating 141,480 tons deadweight capacity, are being constructed, most of which will be delivered this year.

### Mr. C. C. Smith Resigns as Assistant Secretary

Mr. C. C. Smith, assistant secretary of the American Petroleum Institute, has resigned to accept a position as manager of the New York office of James B. Berry's Sons Company, Inc., with headquarters at 11 Broadway, New York.

Mr. Smith was made assistant secretary of the institute at the time of its organization. Prior thereto he had been assistant secretary of the National Petroleum War Service Committee. In both positions he rendered conscientious and intelligent service, and leaves his work with the institute with the esteem and confidence of the staff and the



board of directors. Mr. Smith will continue to be assistant treasurer of the institute.

### **Seattle's Railway and David Harum's Horse!**

Seattle's municipal railway is like David Harum's horse, which, it will be remembered, was "eating off his head."

That is the comparison made by a writer for the Seattle Post-Intelligencer in verse inspired by the failure of the city to operate its traction line on a paying basis, although fares have been increased three times since the railway was purchased from private interests.

Here is the poem:

Dear Stone & Webster, Boston,  
Mass.: We're in an awful mess, alas!  
Remember back a year or two we  
bought a street car line from you?  
Your demonstrator failed to show  
us how to make the blamed thing go,  
and thus, although it gives us pain,  
we'll have to ship it back again. As  
David Harum might have said, "The  
hoss is eating off his head."

You know we didn't want to buy;  
you dished us up a pretty pie! You  
took us for the well-known hick. I  
guess we were—we bought the brick.  
You showed us figures you'd pre-  
pared. "A child can run it," you  
declared. "You'll like your little  
plaything fine, just decorate the  
dotted line."

You let us heft your one-man cars  
and monkey with the nickel jars;  
you showed us how to throw the  
switch and said the line would make  
us rich. We'd also have a lot of fun.  
Yes, anyone could make it run. You  
said, "No hurry for the pay," and  
so we bought it right away.

And having bought, we looked  
around, and to our deep dismay we  
found, by placing sleuths upon the  
the trail, that we had spent a lot of  
kale. We had a jury probe the deal;  
we paid three times too much, we  
feel; and so you're Kiddyars and

track we're wrapping up and  
shipping back.

'I'o own it wasn't any fun. It  
didn't leave us anyone to roundly  
cus when things went wrong. You  
see, we'd cussed you boys so long it  
sort of left us in the air. We really  
were not treated fair. So take your  
car line, we implore, so we can razz  
you boys once more.

According to a summary issued by  
City Comptroller H. W. Carrol, the  
municipal line shows a deficit of \$1,-  
073,020 for the year 1920, \$677,178  
of this sum being charges for depre-  
ciation.

### **New South Wales Will Pay for Oil**

Ten thousand pounds to the first  
producer of 100,000 gallons within  
New South Wales is the inducement  
offered by the ministry of mines to  
stimulate production of oil. The  
American consul at Sydney reports  
a previous reward of 1000 pounds  
was offered for 500,000 gallons, but  
the government, recognizing what  
the production of fuel oil would  
mean to the industry, now proffers  
greater recompense.

### **"A Device of Satan"**

Away back in 1826 railroads did  
not enjoy the popularity they now  
have. A striking example of the feel-  
ing toward them at that time is fur-  
nished by a copy of an old letter  
written by the school board of Lan-  
caster, Ohio, in that year. The letter  
refuses to permit the school house of  
that town to be used for a discussion  
as to whether railroads were prac-  
tical. The letter reads:

"You are welcome to use the  
school house to debate all proper  
questions in, but such things as rail-  
roads and telephones are impossibili-  
ties and rank infidelity. There is  
nothing in the Word of God about  
them. If God designed that His in-  
telligent creatures should travel at  
the frightful speed of 15 miles an

hour, He would have clearly foretold through His Holy prophets.

"It is a device of Satan to lead immortal souls down in hell."

### **Gas Company President Leaves Fortune for Educational Purpose**

George W. Wright, president of the Ashtabula Gas Company, who died recently at his home here in Mercer, Pa., left \$40,000 to the nephews, nieces and other relatives.

The remainder of his fortune, about half a million, he has designated in his will shall be used as a trust fund to assist in educating worthy young men and young women.

### **Some Freak Franchises**

Many contracts entered into five to twenty years ago between municipalities and utility now read like pages from a joke book as a result of the remarkable development in electrical, gas, transportation and communication services.

William J. Hagenah, noted engineer, speaking before representatives of 50 chambers of commerce at the recent Springfield forum called to discuss utility regulation, told the business men that he had found provisions such as these in contracts he had examined.

No street car shall be operated at faster than four miles an hour and a red light shall be carried in advance of such vehicle.

Gas shall be sold at a rate not lower than \$3.80 per thousand cubic feet.

Electricity shall be sold at not lower than 30 cents a kilowatt hour.

Water pressure shall be such as will reach the second story of the city hall.

"The street car contract, a relic of mule car days, was still alive so far as its term was concerned," Mr. Hagenah said. "There isn't a gas company in the state that would

charge anything like \$3.80 per thousand for gas, nor an electric company that would try to enforce a 30-cent per kilowatt hour price. As for the water pressure contract, I found that the city hall it mentioned had long since been torn down.

"If such contracts are 'sacred,' as some politicians claim, their makers would be leaving town in a short time, for the public wouldn't stand for them. The fact is that development of these services is so rapid that no one can predict even for a year or two the remarkable changes that will take place. It would be absurd to bind the public to any such contracts. Utility services and rates are a continuing thing which must conform to the progress which the industry makes."

### **Dayton Gas Co. to Refund \$40,000 to Local Consumers**

The Dayton gas company is to pay back about \$40,000 to local consumers under the city ordinance regulating a four-ounce pressure.

The pressure in January, 1918, and February, 1920, fell below this point and the consumers demanded the 20 per cent refund stipulated by the city ordinance.

Alfred McCray, named special master by common pleas court, today filed his report on the 1917 refund which directs the return of \$29,107.77 to about 35,000 patrons.

The gas company agrees to make the refund on the 1920 shortage, too, as the question has been fought out in court.

The refund for February, 1920, brings the amount to about \$40,000 and the gas company says payments will be made within 15 days.

### **Move to Abolish Home Rule in Michigan**

Declaring that "most people now believe that it is good public policy to demand that utilities furnish a reasonably efficient service, and they

also believe that it is equally good public policy that public utilities receive an adequate rate for such service," Representative Defoe of Alpena, Mich., announced a few days ago the preparation of a bill to give the State of Michigan full control of its public utilities. He also declared that "a state utility commission, possessing and exercising complete control over all utilities, with broad powers of regulation, can pass upon the equity or inequity of any rate free from any local bias or prejudice and can keep the rates throughout the state on an equal basis and without any discrimination." Mr. Defoe pointed out the inability of the municipalities outside of Detroit to engage in the investigations required if rates fixed by the local authorities are to stand in court. The long dispute between the city of Detroit and its street railway was cited as an evidence of the need for the proposed legislation.

#### **Under Close Scrutiny**

If the conduct of private business—big business and little business—were subjected to the same rigid scrutiny as is applied to the conduct of public service corporations, most of us would be in jail and the rest of us dodging the sheriff.—Indianapolis Union.

#### **For Engineer**

The United States civil service commission announces an open competitive examination for assistant oil-shale engineer. Vacancies in the bureau of mines, department of the interior, \$1800 to \$2400 per annum. Receipt of applications to close April 26th, 1921.

#### **Gambier Field Sees Oil Rush**

Great activity is reported in the oil and gas field east of Gambier, the reason being the rush of oil and gas men into the territory for the pur-

pose of securing additional leases on lands.

The story was told that on one farm near this area where producing wells are now located the chore boy has been pumping fine oil out of a well along with the water he was getting for his stock.

This well-pumping manner of discovery has been instrumental in finding many of the largest and best oil fields in the country.

#### **March Gas Rate Cut in Six Ohio Villages**

The Ohio Gas, Light & Coke Co. has announced that the gas rate for the month of March will be reduced from \$2.40 to \$2.30 per thousand cubic feet. Napoleon, Wauseon, Archbold, Stryker, Bryan and Montpelier are affected.

A company has been incorporated and will drill for oil near the Serpent mound in Adams County this spring. The name of the company is The Sinking Springs Oil Co. It is incorporated for \$25,000.

#### **Survey of Coke Industry**

The United States Geological Survey has completed its preliminary returns of the 1920 production of by-product coke. These figures show a record-breaking total for the year of 30,908,000 net tons, an increase of 5,764,000 net tons over the 1919 figures and of 4,910,000 net tons over the 1918 output, which had heretofore been the high water mark of production.

More than 850 new ovens were put into operation during 1920 and 580 additional ovens are now under construction.

Adding these figures to the 1920 estimate of beehive coke production of 20,980,000 tons makes a total of 51,888,000 tons of coke produced in 1920, although this figure is still exclusive of the gashouse coke.

The following table itemizes the

output of byproduct coke for the last three years, by states, in net tons—excluding screenings and breeze:

### Byproduct Coke Output

State.	1918	1919	1920
Alabama .....	2,634,451	2,230,933	3,075,000
Colorado .....	230,663	412,863	511,000
Illinois .....	2,285,610	1,703,903	2,086,000
Indiana .....	3,898,215	3,702,180	4,567,000
Kentucky .....	517,749	408,278	466,000
Maryland .....	474,368	358,237	685,000
Massachusetts .....	556,397	393,331	531,000
Michigan .....	(a)	(a)	1,433,000
Minnesota .....	784,065	586,094	664,000
New Jersey .....	682,148	788,465	722,000
New York .....	1,069,587	751,067	1,041,000
Ohio .....	5,226,334	5,374,027	5,697,000
Pennsylvania .....	4,586,381	5,872,762	7,710,000
Tennessee .....	124,469	104,749	138,000
Washington .....	30,129	26,547	23,000
West Virginia .....	603,393	392,812	414,000
Michigan, (b) Missouri, Rhode Island and Wisconsin .....	2,293,021	2,039,294	1,145,000
Total .....	25,997,580	25,143,542	30,908,000

(a) Included in combined states.

(b) 1918 and 1919 only.

### Fuel Oil Consumed by Railroads

Railroad operating statistics compiled by the American Petroleum Institute from interstate commerce commission reports show that 3,411,928 barrels of fuel oil were consumed by the large steam roads of the United States (by locomotives in road transportation service only) during November, 1920, as against 3,095,881 consumed in that month, 1919. In October, 1920, 3,515,520 barrels were consumed; October, 1919, 2,991,641.

Consumption by regions (in barrels of 42 gallons) was as follows:

Region.	Nov., 1920	Nov., 1919	Oct., 1920	Oct., 1919
Great Lakes..	1,714	15,024	5,404	7,500
Ohio, Indiana				
Allegheny ..	4,852	3,595	5,023	3,333
Southern ...	57,905	58,476	58,142	53,214
Northwestern	247,857	308,262	295,190	307,619
Central West.	1,809,648	1,836,714	1,927,619	1,793,333
Southwestern	1,289,857	873,810	1,224,142	826,642

All regions... 3,411,928 3,095,881 3,515,520 2,991,641

Note:—Fuel oil was consumed by railroads of all regions except the New England and Pocahontas regions.

### Transportation of Nitroglycerine in Oil Fields

The transportation of nitro-glycerine in the oil fields has been attended by extreme hazard because of the highly dangerous nature of the explosive.

It has been the custom for many years to transport nitro-glycerine in standardized tin cans. The risks arising from inequalities in the road surface have been lessened to a considerable extent by the use of rubber-tired vehicles, pneumatic-tired being especially favored.

More effective still is a rubber cover or envelope for nitro-glycerine cans recently developed. This cover minimizes the dangers of transportation of the dangerous explosive to a point never before reached. The cover has already been officially approved by the Nitro-Glycerine Association.

The cover is really an outer box of thick rubber into which a can fits snugly, and from which it can be easily removed. The rubber is made of a compound specially developed to retain resiliency and yet remain impervious to the action of chemicals. This rubber casing not only lessens the effects of bumps and jars received in rough travel, but also prevents friction between the cans. Another advantage is that it prevents the escape of fluid from cans which may spring a leak.

Freeman T. Eagleson announces that he has removed his law office from 33 North High St. to Suite 710, 16 East Broad St., Columbus, Ohio. Telephones, Ohio State 9150, Bell, Main 200.

### Pointed Paragraphs About Pins

Fourteen billion toilet pins are produced by American factories annually. The yearly crop of metal hairpins is 1,250,000,000. Needles of all kinds aggregate 235,000,000 every 12 months. The value of this pin and needle crop is \$13,000,000 at the factories. There are 49 factories engaged in the making of these articles, the total capitalization being \$9,424,000.

Back in 1850 there were only four pin factories in the United States.

## Scraps Picked Up Here and There by the Office Cat

I worried all night, and I worried all day,  
On trouble I feared was to come my way,  
And spite of my shiver, and bother, and bawl,  
The darned old thing never happened at all,  
Whence I have concluded it's safe to say  
That bother and worry don't really pay.

—John Kendrick Bangs.

### The Mexican Trail of Woe

Total population of Mexico, 15,000,000; Indian population, 12,000,000; population unable to read or write, 12,000,000. American population in Mexico in 1910, 75,000; Americans expelled by conditions in Mexico, 55,000; Americans murdered by Mexicans since 1910, 653; Mexican property destroyed or confiscated, \$1,200,000,000; indirect loss to Americans, \$500,000,000; known expenditures by this government on account of Mexico, \$250,000,000; number of Mexicans killed during the revolutionary period, 325,000; total number of presidents of Mexico, all shot in or shot out of power, 73.

One of the greatest shortcomings of many so-called educated people, is their idea that their education is complete and that they needn't keep on learning.

Shades of the Polynesian aborigines! The heathen Fiji Islander has given up his time-honored sport of eating missionaries and has gone in for automobiling. Figures obtained by one large Akron tire company show that about 150 automo-

biles now are operating in the Fiji Islands, whose inhabitants for decades have been classed with the "Wild man of Borneo" and the bushman of Tasmania. The Fiji Islanders show a preference for American cars and American tires.

The death of the chief justice of the United States Supreme Court calls attention to the fact that in all the 132 years since the court was established there have been just nine persons placed in that high judicial position. The longest service was that of John Marshall—34 years—and the shortest that of John Rutledge, whose service was less than a year.

An awful lot of energy is used in hating people who don't care whether you do or not.

Out of 13,703,987 alien-born citizens in the United States, 678,647 live in Ohio, with German-born citizens out-numbering all others. The number of alien born in the United States has increased 2.6 per cent since 1910.

Timothy is said to have derived its name from Timothy Hansen of Maryland, who introduced it into the American Colonies from England in 1720. It is a native of Europe, but is now widely distributed throughout the world.

When the Americans first arrived at Panama, the cab-drivers would shout "Me speak it, the English." This soon changed to "spickety" and then to "spiggoty." Thenceforth the Panamaians were "spigoties."

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Advise us as to your requirements and we shall be pleased to supply you with detailed information.

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**General Offices and Works, East Pittsburgh, Pa.**

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COLUMBIA, S. C., 1433 Main St.  
LOS ANGELES, Union Oil Bldg.  
SEATTLE, 802 Madison St.

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MADE AS WELL  
AS THEY CAN  
BE MADE WITH THE  
EXPERIENCE OF  
EIGHTY EIGHT YEARS

*The*

**C&G**  
**COOPER**  
MT. VERNON, OHIO  
**CO.**

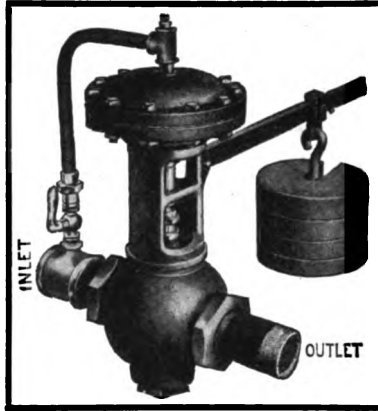
*Since 1833 Engineers and Builders*

11 Broadway, New York

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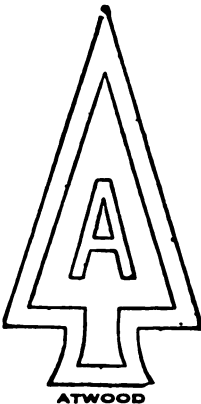
Stops the flow  
of gas in a  
pipe line when  
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Protect your  
gas well from  
exhausted pres-  
sure. Write for  
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**The Chaplin-Fulton Mfg. Co.**  
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**The Vigilant Oil Level Regulator**

## Atwood Valves and Fittings For High Pressure Gas Line Service



THIS TRADE MARK is your GUARANTEE of VALVE AND FITTING VALUE. It means that you cannot buy a better valve or fitting than the one on which it appears—and it appears only on the PRODUCT WE MANUFACTURE.

**Pittsburgh Valve,  
Foundry & Construction Co.**  
Pittsburgh, Pa.

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**Longer Belt Life**

**Newark,**



**Better Belt Service**

**New Jersey**

# Everything for Oil and Gas Wells

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If it is  
for the  
Oil Country,  
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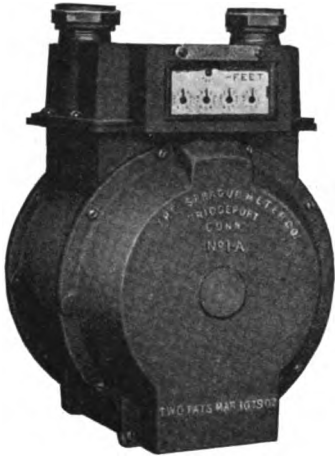
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Any Size  
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Anywhere  
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**BRANCH STORES IN ALL OIL FIELDS**





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## SIMPLE CONSTRUCTION

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**Low first costs and  
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**BRIDGEPORT, CONN.**

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*Heavy Pressure*  
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**For Pipe Line, Refinery,  
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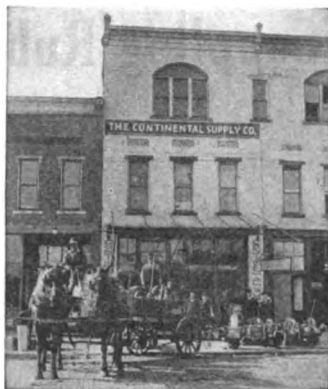


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**Branch Office:**  
**First National Building, Pittsburgh, Pa.**  
**Factory: Troy, N. Y.**

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**Continual Growth is Proof of Continual Service**

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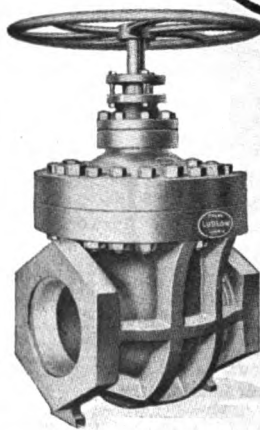
Columbus, Lodi, Logan, Marietta, Newark and West Park, Ohio,  
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# SURVIVAL OF THE FITTINGS

*The success in putting out the great fire in the Amatlan Field of the Mexican oil fields, was entirely due to the merits of LUDLOW VALVES.*

*The valves on the both wells which were on fire are still being used to regulate the flow of oil. No other valve could have withstood such a severe strain.*



## Challenge Working or Upper Lock Crown Valve



Fig. 35

This Valve is made in two main parts only—the Crown and the Barrel.

The bottom and the barrel are made in one piece, therefore the cups and rings cannot come off in the well.

The crown screws directly on to the barrel, which is of uniform diameter, and is locked in place with a wide hexagon lock nut.

The extension on crown below pin is the same diameter as valve barrel and is added to enable both crown and barrel to be caught with one combination socket in case the crown should become unscrewed, or to catch the crown if pin should break off. The ball and seat do not interfere as is the case in the old style valve.

We believe this to be the most practical and simple lock crown valve on the market.

Sold only by

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### Gas and Oil Well Con- tractors and Drillers

Twenty years actual experience  
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*Special and personal attention  
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greatest possible speed in com-  
pleting each contract.*

**Submit Your Proposition**

## CLEVELAND TIN GAS METERS

For registering Natural and  
Artificial Gas.

Manufactured in

**Type B**  
for Low Speed Operation

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for Large Consumption

**Cleveland Gas Meter Co.**

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**THE NATIONAL SUPPLY COMPANIES**

# *The* OHIO GAS AND OIL MEN'S JOURNAL

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ISSUED MONTHLY BY

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THE OHIO GAS AND OIL MEN'S ASSOCIATION, COLUMBUS, OHIO

811 First National Bank Building

R. G. STONE, Editor

WM. H. THOMPSON, Associate Editor

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## A Suggestion for an Administrative Order

As a result of investigations made by The Ohio Fuel Supply Company and The Logan Natural Gas & Fuel Company, of conditions of leakage and waste of natural gas on the part of free consumers upon whose premises gas wells are located, it has been clearly established by meter measurements that the quantity of gas lost to public use is appalling and wholly inexcusable.

The free gas consumer is guilty of neglect and failure to keep his lines in condition or to use gas in economical appliances, thus requiring the various companies to deliver to them many times the reasonable amount of gas required for their very necessary purposes and at excessive pressures, through which other consumers and the public are deprived of gas that will be needed for their comfort and well-being, especially during the winter months.

In driving through the country at night, it is a common sight to see flambeaux burning, sometimes two and three on one farm, a prodigal waste of the valuable fuel cities are fighting for.

We realize that about the only way to bring these free consumers to reason is by Public Utilities Commission regulation, and we believe the Commission has the legal power and should issue an administrative order to the effect that all free gas consumers must forthwith repair their lines, reduce their leakage to a minimum and their consumption to reason, or free gas may be temporarily denied to them.

Following is the syllabus of the decision of the Supreme Court of West Virginia in the case of Pittsburgh & West Virginia Gas Company v. Elmus F. Richardson.

1. An owner of real estate who has leased the same for the production of oil or gas therefrom, with a stipulation in such lease that he shall be allowed to use at his residence gas from any well drilled upon the premises for domestic purposes, free of charge, is entitled, in case a producing well is drilled upon such premises, to such quantity of gas produced therefrom

as is reasonably necessary for his domestic uses, for the purposes to which such natural gas is ordinarily devoted.

2. A regulation by a lessee in an oil and gas lease for the establishment and maintenance of meters upon lines furnishing free gas to the lessor, under the terms of the lease providing that such lessor is entitled to the use of gas free of charge for domestic purposes, is a reasonable and proper regulation, and a court of equity will enjoin such lessor from interfering with or obstructing such lessee in the installation, maintenance or reading of such meters.

3. A regulation by the Public Service Commission of West Virginia requiring all producers of natural gas who furnish any of their product to persons free of charge to measure such part thereof by a meter, and to report the amount thereof to the Commission at certain intervals, is a reasonable and proper regulation, and any interference or obstruction upon the part of such free user of gas to the carrying out of such regulation will be enjoined by a court of equity.

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## Cleveland Becomes a Gas Conservation Municipality

Cleveland, the largest city in the world enjoying the benefits of natural gas, will become a gas conservation city October 1, when an upward sliding scale of rates becomes effective. The new rates will be:

Forty-five cents per thousand net for the first 10,000 cubic feet; 55 cents per thousand net for the next 10,000 cubic feet; 75 cents per thousand net for all over 20,000 cubic feet, with a minimum monthly charge of \$1.50.

The change in rates was ordered by the court of appeals.

City council and the East Ohio Gas Company have been attempting to negotiate a new price agreement for months. Council passed an ordinance continuing the price at 35 cents per thousand cubic feet. The East Ohio filed court action to enjoin the city from enforcing the ordinance, and common pleas court held the 35-cent rate to be unreasonable and fixed a 45-cent rate.

The city appealed with the result that appellate court on motion has just issued an order, permitting the East Ohio to place the upward sliding scale of rates in effect, beginning October 1, as a temporary rate during the pendency of the suit. In announcing the decision, Appellate Judge Vickery said:

"The rate of 35 cents will not afford a fair return, such a return as investors are entitled to have. We think that the rate that will afford a fair return should be higher than this, and the ordinance passed by the city compelling the furnishing of gas at this rate, is in a measure an unfair and unjust ordinance, and in a measure confiscatory, and therefore illegal. We think that we have the power that the court of equity always did have and still has to interfere where there is a confiscatory rate sought to be imposed upon a utility. We think that this rate (the 35-cent rate) would be taking the property of the gas company without due process of law, and without just compensation. Taking property at pleasure, without just compensation, is in violation of the Constitution of the United States and of the Constitution of Ohio."

## Sulphur Removal By Oil Washing

By E. R. Hamilton, Superintendent Nova Scotia Tramways and Power Company, Limited,  
Halifax, Nova Scotia. Presented at Canadian Gas Association Convention

A year ago at the meeting of this association it was stated that if the laboratory results on oil washing for sulfur removal were borne out in practice the sulfur problem at Halifax would be solved. In a preceding paragraph of that paper a number of anticipated difficulties were pointed out. The results of actual experience have shown that some of these were real, while others have proved to be negligible and in their place new difficulties have developed.

The equipment used at Halifax for oil washing is practically the same as originally planned. There are three steel tower scrubbers, four feet in diameter by sixteen feet high, connected in series by twelve-inch pipe. These at first were entirely filled with wooden grids, but now part of the wooden grids have been taken out and excelsior substituted, so that each scrubber has four layers of excelsior about twenty-one inches deep carried on wooden grids twelve inches deep, giving a total depth of scrubbing material of eleven feet six inches. By the substitution of excelsior for the wooden grids it is estimated that the scrubbing surface has been increased over three times the original area of three thousand square feet per tower.

The oil is circulated through the towers by means of small, electrically-driven gear pumps. It was planned to recirculate the oil in the first two scrubbers to the full capacity of the pumps, but the results proved this to be bad, for saturated oil was brought in contact with partially purified gas and the absorption was reversed. To avoid this dumping boxes were arranged for each scrubber in order to give sufficient volume of oil to obtain an intermittent spray, and the oil pumped to each of them successively. The rate of flow of oil is controlled by an orifice on the discharge pipe from a small tank directly over each dump box. The pumps deliver an excess of oil, which flows back to the receiving tank from which it was pumped, and in this way a constant head is kept on the orifice and the operation of the pump observed.

The oil used for washing is refined from a paraffine base crude, and is sold under the trade name of "Pale Paraffine Oil." While this is a high grade lubricating oil, our laboratory tests have shown that its absorption capacity for carbon bisulfid is equal to that of kerosene, gas oil or crude oil which, because of our geographical location, would cost us practically the same. The slightly heavier body makes it easier to pump. The freezing point is 26° F., or practically the same as that of gas oil or straw oil. Another factor about this oil which is particularly desirable is that it does not easily emulsify. Only once during the past six months have we had trouble with an emulsion, and that we believe to have been due to stirring up a large amount of fine carbon, which had been deposited in the oil by the tar still, while repairing one of our storage tanks. This carbon apparently acted as the necessary agent to bring the oil and water together, but the regular steam distillation of the oil was sufficient to separate them.

After passing through the scrubbers the oil is collected in a receiving



tank near the still until there is sufficient to handle. As was stated a year ago, it was thought that the dehydrating and dephlegmating column on the tar still would prove large enough to drive off all the carbon bisulfid, and this has proved to be the case. The column is three feet in diameter by nine feet high, and consists of five sections. The three lower sections have steam coils, and in addition to these there is a live steam connection into the middle section above the level where the saturated oil is admitted. Steam at one hundred and twenty pounds pressure is used on the coils in addition to the small quantity of live steam admitted. The live steam serves to reduce the vapor tension of the light oils that have been picked up in the wash oil, so that distillates up to  $140^{\circ}$  C. are given off as well as carbon bisulfid. The upper part of the middle section and the two top sections form a dephlegmator in which the vapors and steam are reduced in temperature to  $210^{\circ}$  F. and then pass to a water-cooled worm-condenser. A vertical vent pipe connected at the inlet of the condenser takes away nearly all the carbon bisulfid, so that we obtain a fair grade of crude benzol after separating it from the condensed steam.

The production of benzol amounts to about half a gallon per ton of coal carbonized. While this figure is low it does not represent an attempt on our part to extract benzol primarily, and our yield is subject to considerable fluctuation depending upon how fast and at what temperature we distill the wash oil. Generally the wash oil is pumped through the still at three hundred gallons per hour, and is raised in temperature to  $270^{\circ}$  F. The operation requires the attention of one man for about four hours to handle a batch of one thousand gallons of oil. This time includes the preliminary warming up of the still and pumping a finished batch to the redistilled oil storage tank. The main body of the tar still serves as the first receiver of the distilled oil, which is allowed to stand in here for twenty-four hours to effect a partial cooling.

The chief difficulty with the whole oil washing process has been in the temperature control. Due to the high vapor tension of carbon bisulfid the temperature must be kept down. The best operating condition would be  $60^{\circ}$  F. or under if it were possible. In fact our best results have been obtained in the fall and spring when the uniform atmospheric conditions served to reduce our cooling problems to a minimum. In severe winter weather the oil tends to freeze, while in summer it is too hot to be effective. To overcome this we have housed the scrubbers and installed heating coils for cold weather and evaporating cooling coils for the oil in hot weather. We have found that the temperature control of both oil and gas must be regulated to one or two degrees. In no other way are we able to account for the variable results in the efficiency of the absorption. Very often we have found that the process has reversed and carbon bisulfid has increased because of a rise in temperature combined with a variation in the mixture of the coals being carbonized. Some of the best absorptions have occurred when the carbon bisulfid has been exceptionally high, so that in this respect the process has acted as a balance wheel and equalized as well as reduced the sulfur content of the gas.

The rate of flow of the oil affects the absorption but not as much as the temperature. We have varied the rate from 1.5 gallons to 7.5 gallons per thousand cu. ft. of gas and have obtained good and poor results with all. The best absorptions have been obtained with an increased flow of oil, but

this necessitates an ample supply of oil, added work in distilling it and much increased capacity for cooling it. The results indicate that eight or more gallons per M are essential to obtain a 50% reduction in the sulfur content at the ordinary temperatures—that is, from 70°-75° F.

We have not found that there is any serious reduction in the heating value of the gas due to the scrubbing. The maximum effect occurs when fresh oil is introduced into the system, and then the reduction may amount to from twenty to twenty-five B.T.U.'s until the oil has become saturated. The rapid distillation of the wash oil tends to leave considerable toluol and benzol in it, so that its stripping effect on the gas is very much lessened.

It is our experience that the Cape Breton coal breaks down into naphthalene very easily under our system of carbonization. With a temperature gradient of 2100° F. to 1800° F. from the bottom end to the top end of our inclined retorts there is a strong tendency to form naphthalene. The oil washing system has been a very decided help in overcoming this trouble and allowing us to raise our temperature in the retorts and increase our yield from this coal by over 10%. Sufficient naphthalene is distilled over with the light oils so that the wash oil remains practically uniform in composition, showing no sign of thickening or sludge. It was thought that the excelsior in the scrubbers might act as a filter to accumulate naphthalene sludge, but there has been no indication of this after four months' continuous operation and the back pressure has not increased.

Because of the naphthalene which is carried over in the steam distillation with the crude benzol we have found it desirable to mix with it an equal volume of gasoline before using it for motor fuel. Previous to mixing we found that in cold weather the naphthalene would crystalize out in the feed pipe, particularly in the vacuum feed type of carburetor, and shut off the supply to the engine. The mixture of gasoline and crude benzol with a properly adjusted air supply to the carburetor has proved to be very satisfactory.

Considerable mechanical loss of wash oil has taken place, but this has been largely overcome by careful inspection of joints and stuffing boxes. Fresh oil has been added from month to month to make up for the losses, but it has not been necessary to redistil or filter any of the wash oil because of accumulated heavy tar oils or naphthalene sludge, as had at first been anticipated.

The expense of operating this system has been high, but it has not required the extensive plant necessary for the catalytic system nor the constant attention of an operator. During the past ten months we have put through the scrubber 70 million cu. ft. of gas varying in sulfur from 35 to 160 grs. per 100 cu. ft. The reduction has been from 5 grs. on the first to 60 grs. on the latter with an average flow of oil in each case of 4.5 gals. per thousand cu. ft. of gas. As has been pointed out, the results have been irregular, but this may be accounted for by the temperature control upon which we are still working. During the ten months we have used up 3,000 gals. of wash oil and have obtained as a credit against this 3,000 gals. of crude benzol. The power required to drive the pumps amounts to 1.0 Kw. and the steam consumption for the still and pumps to handle the oil in storage amounts to 1,400 lbs. per day. The average expense per thousand cu. ft. of gas based upon the figures for the month of June is 3.34c, including labor, power, steam and oil losses, against which we have a credit

of 1.53c per thousand cu. ft. of gas for crude benzol, making the actual cost 1.81c without interest and depreciation charges. As this is figured on a month of low production 6,870,000 cu. ft. and the oil loss charge is prorated for the ten months and represents nearly 50% of the expense, it is evident that considerable reduction is possible in the cost with increasing send-out and smaller oil losses.

Our laboratory tests show the freezing point of fresh wash oil to be  $-3^{\circ}$  C., and after continued use and redistillation it decreases to  $-5^{\circ}$  C. The specific gravity of this oil is .885. Analyses of the wash oil to determine the increase in sulfur have not proven satisfactory because the different methods employed have not checked well against each other. The combustion method with sodium peroxid has shown .303% sulfur in the fresh oil, .347% sulfur in the redistilled oil and .432% sulfur in the saturated oil. These figures indicate the relative absorption of carbon bisulfid in the scrubbers and its liberation during the steam distillation.

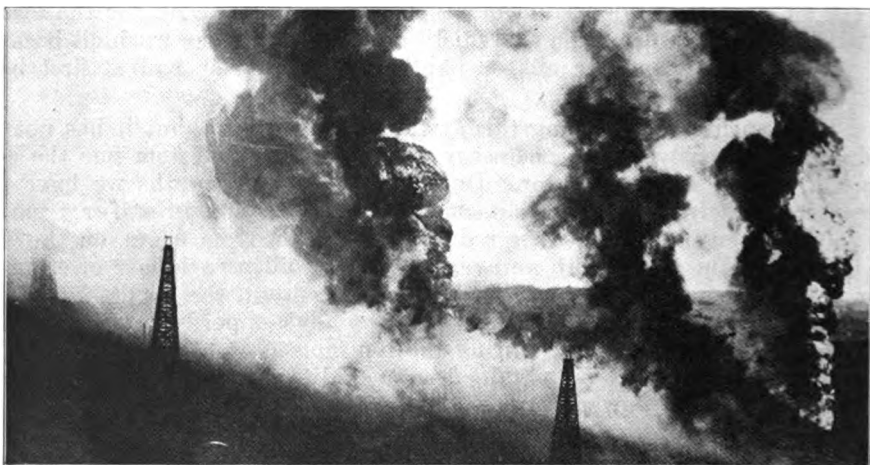
Our experience with the oil washing process for removing carbon bisulfid from coal gas has shown us that the method is feasible, and for a small plant compares favorably with any of the more elaborate systems. As has been emphasized several times, the temperature control is the chief problem to be dealt with. With this matter solved the whole process then becomes automatic.

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## The Fire in the Amatlan Fields, Mexico

On the 20th of July fire broke out in two wells in the Amatlan Fields, Mexico, which was a loss to some of the oil companies of practically two and a half million dollars

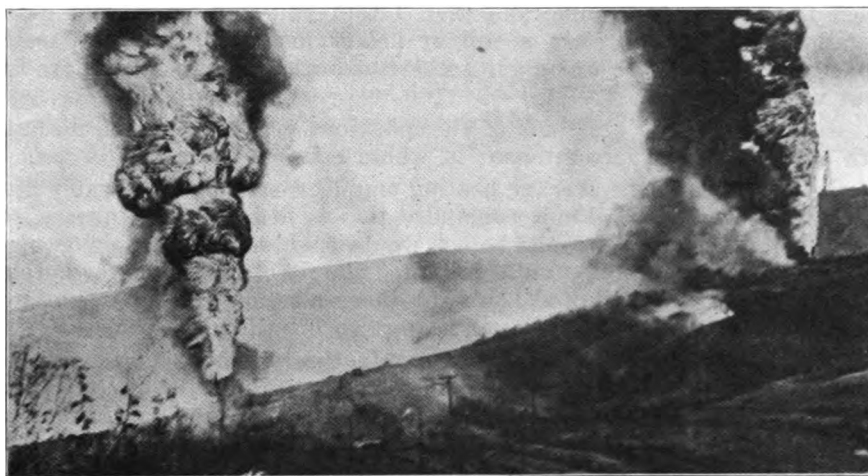
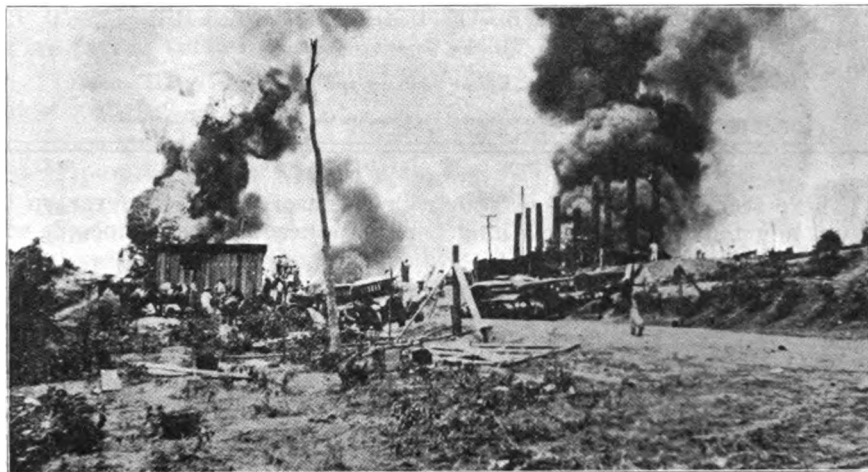
These wells which came in at the rate of 40,000 and 50,000 bbls. per day,



Amatlan Field, Showing Two Wells On Fire

burned for four days and were extinguished by simply closing the valves under a water screen.

A zig-zag lane of iron and asbestos to one of the wells was built and then relays of men were placed with water from a hose playing on the first two and water from a hose playing on the men in charge of the first hose,



*Different Views of the Fire*

and so on back to where the men could stand the heat. They succeeded in reaching the first well at the first attempt and closed it, extinguishing the fire. The same method was used in closing the second well.

This fire burned one hundred thousand barrels of oil per day for five and one-half days, the flames of which were estimated to be five hundred feet high and the smoke ascended in a column 7800 feet high.

Ludlow Valves of 2500 pounds working pressure were used on these wells, and they withstood the flames and are in use today on the same wells.

## House Furnace Efficiency With and Without Tank Heater Coils

Everything Has Its Cost and Its Value. Only So Much Can Be Gotten Out of Fuel. No Matter What That Fuel Be. The Domestic Coil For Tank Heaters Reduces the Heating Capacity of a Furnace

By Edwin Newsom, A.S.S.E., Editor Sanitary and Heating Journal, Toronto

Paper Presented at Annual Convention of the Canadian Gas Association at Montreal

There seems to be a lot of people in this world who are ever on the lookout to get something for nothing. This applies somehow to people who, as a rule, ought to know better.

If I came to any of you gentlemen and said, "Give me ten dollars, and I will show you in a second how it can be turned into \$15.00, without, as a matter of fact, ever changing ownership," what would you think?

If I said to you gas men that although the B.T.U. value of gas sold by you was 500, I could get 600 B.T.U.'s out of it, what would you think of such a statement?

Very well, if I sold any of you a hot water boiler or furnace, say a Number 5 with a heating capacity of 835 square feet of radiation or 2,500 lineal feet of one-inch pipe, and then I told you that you could heat a 30-gallon range boiler from a coil or heater installed, and that heating capacity of the furnace was going to be cut down by 90 to 120 square feet, what would you say?

Gentlemen, these are some of the questions which should be discussed with every house owner or tenant in whose house a furnace is in use.

Some years ago the average heating engineer, steam or hot water fitter, or whatever you may call him, concluded that to fit a coil in a furnace, said coil to be connected to a range boiler, would enable the owner or occupant of the home to procure an almost unlimited supply of hot water for nothing, the average person swallowed hook and line, and today there are hundreds of thousands of coils and domestic heaters so installed in furnaces.

A number of boiler and furnace manufacturers, however, began to give the matter some serious study, and concluded that to install such coils meant adding a load to the furnace. Today very few of these boiler manufacturers allow such a theory, or, for that matter, practice, to go unchallenged.

In quite a number of fitters' hand-books, published by boiler manufacturers, the attention of the reader is called to the fact that if a coil or heater of any kind is inserted in the fire box of a furnace, a deduction from the rating must be made equal to 3 square feet of radiation to every gallon of water heated.

Such being the case, if we assume that only thirty gallons of water is used in a day, or that a 30-gallon boiler is connected to a coil containing one square foot of heating surface, then the heat loss would be equal to 90 square feet of radiation.

It is estimated that most residences are of such a size as to require a No. 4 boiler to heat the interior (the rating of such a size of boiler is about

650 square feet), and as a 30-gallon boiler is the average size installed, then the furnace capacity for heating purposes has been reduced by at least 90 square feet or equal to about 15 per cent.

But this is scarcely the whole loss incurred. Let us consider another authority on heating—William Hutton, in his book entitled "Hot Water Supply and Kitchen Boiler Connections," writes as follows:

"Cast iron section suspended from fire box crown, and containing one square foot of surface is equal to 15 square feet of radiation.

"Cast iron sections in contact with fire, one square foot equals 50 square feet of radiation.

"Pipe coil, 1 square foot equals 20 square feet.

"Pipe coil, 1 square foot equals 35 square feet."

But, this same author goes on to say, "as the above readings are based on a flow of water to the radiators at 170 degrees F., and that is about the highest temperature maintained in hot water supply tanks, it may be calculated that for domestic use:

"1 square foot of cast iron surface in contact with the fire will heat 25 gallons per hour.

"1 square foot of iron coil suspended over the fire will heat 15 gallons per hour.

"1 square foot of iron coil about half in contact with the fire will heat 25 gallons per hour.

"1 square foot of brass pipe coil in close contact with fire will heat 30 to 35 gallons of water per hour."

While the above figures are only approximates, they are based upon actual observation, under every day conditions, and if such figures are anywhere near the mark it is easy to see that to secure such a large amount of hot water is bound to interfere as well as cut down the heat rating of a boiler.

The question of heat loss from range boilers, too, must be taken into consideration, and to prove that there is a big loss I will give you one case where my own gas bill averaged 25 per cent. less when I covered a range boiler with a good asbestos covering.

We lived in a house where all heating of water and cooking was done by gas. The only coal used was for the furnace, and, by the way, I had no domestic coil in the furnace. My monthly gas bill, previous to covering the range boiler, averaged \$6.25 to \$6.50 per month, winter and summer, for a family of nine in the house. After I covered the boiler the gas bill dropped to \$4.75 and \$5.00. The cost of gas per 1000 was \$1.20.

The loss of radiation from a range boiler, based upon regular heating surface, is approximately 17 square feet for a 30-gallon size, and this amount can be added to, when we consider that the average basement is cooler than any other portion of the house. Most of you know that range boilers are now as a rule placed in the basement.

I am not going to give you any names or addresses where coils or domestic heaters have been taken out of furnaces, but I can assure you, gentlemen, that during ten years' experience with the tools I have proved conclusively that a domestic coil in a fire box does lower the rating of a

boiler or furnace, and, as editor of two trade journals during a period of eight years, I have had lots of experience all over Canada.

About four years ago a real estate agent connected with a trust company called me in to look at the heating systems installed in a number of houses owned by them, which were hot water. These systems were well installed, and I learned that a competitive boiler manufacturer claimed that their furnaces were a certain per cent. more powerful, etc. The houses had only been built about six months, and the tenants complained bitterly about the houses being cold. This was in January.

I measured up the houses, arrived at a heat loss, found that the heating specifications had been carried out to the letter. Each house contained 900 square feet of radiation (hot water). Each house had a 40-gallon range boiler, with a well-known gas water heater fitted to same, a double ring, or sectional domestic coil was also connected to each range boiler. I found also that after the furnaces had been decided upon the glass surface had been increased by adding a sun room to the houses. These had to be heated from the same furnace, and this made the furnaces approximately 15 per cent. too small.

I at once advised that before changing the furnaces it would be well to take out the domestic coils and see what happened. The coils were taken out, and from that time on the furnaces gave splendid service.

As a matter of fact, I could go on citing case after case where the domestic coil has resulted in as high a heat loss as 20 per cent. of a furnace. My opinion is that where a house requires, say, 600 feet of hot water radiation, a 12-inch coil will cut down the furnace rating by at least 120 square feet. I know of scores of cases where such has been proved.

I am not, however, condemning the use of a domestic coil in furnaces, but I do object to heating men and those interested in selling coils allowing the public to be deceived.

If the public are told that to install a domestic coil in a furnace means a loss instead of a gain, then I have no fault to find with the domestic coils. And, on the other hand, if where a 600-foot boiler is needed with, say, 500 sq. feet of radiation installed to heat a house, and a 30-gallon boiler is to be heated by, say, a 12-inch cast iron coil, then the customer, or builder, should be told that the furnace is being overloaded.

Just imagine, at this present moment, the cost of a hot water heating system averages \$1.75 to \$2.00 per square foot of heating surface, including boiler, and say the job requires 500 feet of radiation, and the boiler is a 600-foot one. The total cost of such a job would be around \$875.00 to \$1,000.00, and we will assume that a domestic coil is installed with a 30-gallon range boiler. This latter cuts down the boiler power by about 120 square feet, or even based upon figures taken from a number of Fitters' Companions, say, 90 square feet is from \$157.50 to \$180.00.

How foolish it is to install a domestic coil in the face of such figures, and particularly when such a domestic hot water supply is only available during the winter season.

I suppose most of you gentlemen know why coils do reduce the heating capacity of a boiler. The cold water passing through the coil cools the unconsumed gases, and interferes with proper combustion.

Such a coil also prevents the fire from reaching the first section of the heating surface of a furnace.

The same arguments apply where warm air furnaces are in use. Have any of you gentlemen present observed how very dirty a set of hot water coils get when such coils are used for combination warm air and hot water heating systems? You will find that not only do the coils get caked and coated with a pitchy coating, but the warm air radiator and smoke ways or fire travels will be found to be heavily coated with soot, etc., and, other than asbestos, I do not know of a more effective heat insulator than soot. These soots are in reality unconsumed fuel, so that it will be clearly seen that any apparatus installed in the fire box of a furnace which interferes with the proper combustion of fuel is a detriment to any heating system, whether for domestic or commercial heating apparatus.

## Wastes That Ought to Be Prohibited

### Summary From Technical Paper No. 257

Technical Paper 257 of the U. S. Bureau of Mines, Washington, D. C., "Waste and Correct Use of Natural Gas in the Home," gives instructions on raising burners to the correct position. In general it would be advisable to consult with the local gas company first for they are glad to give advice and are often equipped to make the necessary changes with the least cost.

(a) Improper adjustment of appliances, resulting in imperfect combustion.

(b) Low burners, that is, burners more than  $1\frac{1}{4}$  inches away from the cooking vessel on cook stoves.

(c) Solid tops on cook stoves. Grid tops or skeleton lids only should be used.

(d) Use of gas in coal furnaces and stoves. Especially built gas heating appliances, giving an efficiency of at least 75 per cent should be used.

(e) No hot-water heater should be used that gives an efficiency of less than 75 per cent.

(f) No tank heater, that is, tank with burner underneath, should be used without an outer jacket and flue connection.

(g) All daylight burning of lamps ought to be prohibited.

The prohibition of the foregoing wasteful uses of natural gas would—

(a) Greatly improve the quality of the service.

(b) Immediately convert low-pressure conditions into usable service for cooking.

(c) Cut down the needed consumption during the cold weather period—where the demand is now greater than the available supply—so as in effect to make more gas available for all.

(d) Add 15 to 20 years to the period that natural gas will be available for domestic use.

(e) Because of the greatly increased efficiencies obtained—even with decidedly higher prices per 1,000 cubic feet—would permit the domestic consumer to get the same service without a greater annual outlay of money.

(f) Permit the many small towns that are too small for the introduction of manufactured gas to have gas service for a much longer period.



## The Public and the Oil Business

The Lamp

With the automobile almost entirely out of the luxury class, the price of gasoline has become of as much concern to the average American citizen as the cost of shoes, or rents. He feels, judging by the questions he asks, that his gasoline is costing too much per gallon. The daily papers have made him familiar with the situation in the crude oil market, and he thinks that a reduction running to 70 per cent, from the high price of Mid-Continent crude last year should be translated into much lower priced gasoline.

Gasoline has not dropped in price as far as crude because the other products of petroleum have dropped much more than crude in proportion. Even on the price of gasoline, the aggregate saving to the public approximates one-half billion dollars a year. The result is that the public is dipping into its pockets for less money than the petroleum industry, as constituted today, must have to live on. The industry is trying to readjust its budget to the change, pinching first here and then there, and feeling decidedly uncomfortable about it all.

Both the producer and the refiner are wondering if the surplus of crude and finished products which brought about the widespread cutting of prices will be absorbed at the new levels, or if liquidation must go still further before the cycle is completed. A survey of the marketing position of the industry may serve at least to clear up misunderstandings.

Who fixes prices for petroleum products?

Primarily, the public, through its expenditure for the various products of the refinery. If the public demand falls off the refiner has less money to spend for crude oil and for the manufacture of petroleum merchandise from it. Nothing he can do will make the public consume more of his product, nor can a higher price for the gallonage sold make up for a loss in the volume of business.

Although gasoline, kerosene, gas oil, fuel oil, lubricants and wax are all necessities of life, the public has shown that it can get along with a smaller quantity than the industry is now producing and refining. Competition of numerous companies in every field for the business offered there insures a close market.

Prices of products of petroleum are determined, in the main, by just three factors:

First—The consumers' demand.

Second—The supply of crude.

Third—The cost of manufacture and distribution.

The refiner cannot get away from these controlling conditions, nor can the producer. The law of supply and demand is inexorable in its workings. It corrects an over-supply by making it unprofitable to produce so much and when prices go too high it operates to increase production until there is again an over-supply.

Hard as he has been hit by successive reductions the producer has enjoyed one important advantage over the refiner in that he receives cash

each day for the crude oil delivered. The refiners and purchasing companies are compelled to take the entire risk in storing either as crude or finished products the surplus over and above the current public demand.

We have seen in the United States in the current year successive breaks in the price of crude oil which have carried Pennsylvania from \$6.10 a barrel down to \$2.25, and Mid-Continent from \$3.50 to \$1.00. The refiner does not make these prices and he had nothing to do with the collapse. It was the consuming public, reducing the total of its expenditure, that brought about the readjustment. And as most reforms go too far, this scaling down has gone beyond the point at which producers can afford to develop new sources of supply.

The result is inevitable. In time consumption will again overtake and pass production and prices will go up to the point that is necessary to stimulate drilling once more. This is simple economics that applies just as well to coal, or live-stock, or wheat. As a matter of fact, the same pressure exerted on the oil industry has for the time being made it unprofitable to grow cane sugar or cotton. Yet these articles are no less essential today than when sugar sold at 28 cents and cotton at 45 cents.

The extent to which the consuming public has cut down its expenditure for petroleum products is amazing. The inability of foreign nations to finance any but the most necessary purchases in this country has made inroads into the export demand for petroleum and other products of American industries. A record number of vessels, many of them oil burning, are tied up and out of the market as consumers of fuel oil. A large number of war-time industries have closed down and most other plants are running at a reduced schedule. That has reduced the demand for lubricants and fuel oil. The lessened demand meant that refineries were running more crude than was being consumed as finished products. That led to price cutting as each company tried to hold its share of such business as was available. The total receipts for petroleum products were thus reduced, first by the smaller volume of some products sold and second by lower prices paid for the total volume of products sold.

It would be almost an impossible task to ascertain with mathematical accuracy the exact difference between the amounts which the consumer was paying the oil industry during the period of highest prices last year and the low prices existing now. It is, however, possible to obtain a rough approximation of the shrinkage in the public's oil bill for 1921 as against 1920 which at least will show the tendencies of the market by multiplying the output of refineries in 1920 by the amount of the decline in current tank wagon market prices for gasoline and kerosene and of F. O. B. refinery prices for fuel oil and lubricants, the prices being taken from current trade journals for the two periods. Such an approximation shows that it has been the constantly diminishing volume of revenue from the public which has depressed the price of crude. The decline in the market value of the principal products of petroleum figured on this basis is shown in the following table.

	Decline in Value
Gasoline .....	\$457,563,179
Kerosene .....	204,419,640
Gas and Fuel Oil .....	558,657,633
Lubricating Oil .....	175,657,284
<b>Total .....</b>	<b>\$1,396,297,736</b>

**Who's Who in The Gas and Oil Industry**

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**MR. THOMAS B. GREGORY.**  
President.  
The Manufacturers Light and Heat Co.

It will be seen that if we take last year's refinery output and figure its value at prices obtaining on June 28, 1921, there is shown a shrinkage of \$1,396,298,000. Even if \$150,000,000 were struck off of the fuel oil decline on the theory that the highest prices existing during 1921 could not be called representative, the shrinkage in the volume of revenue from the public would approximate \$1,250,000,000. From the expense of manufacture and distribution and the sums paid producers it has not been possible to take anything like that aggregate loss in sales. The expense of gathering and transporting crude across the country by pipe line and by rail, of manufacturing, transporting and marketing the refined products, taken in the aggregate, are not far below the costs prevailing last year when prices were at their peak.

The following table shows the decline in the market value of domestic crudes comparing last year's prices with present prices and figures on the basis of the total quantity of crude produced in the various fields in the year 1920.

	Decline in Value
Oklahoma .....	\$264,312,500
California .....	28,530,360
Central and North Texas.....	177,380,000
Coastal Texas .....	60,115,200
Kansas .....	96,252,500
North Louisiana .....	84,740,000
Coastal Louisiana .....	4,207,200
Wyoming .....	38,409,750
Illinois .....	26,930,000
Kentucky .....	17,359,800
West Virginia .....	31,466,050
Pennsylvania .....	28,699,440
Ohio .....	14,824,000
Indiana .....	1,864,000
New York .....	3,488,100
Montana .....	756,000
Colorado .....	247,500
Tennessee .....	48,895
Total.....	\$879,631,295

If the producer assumed the whole burden of the loss in sales of the finished products he would receive nothing at all for his crude, since the shrinkage in value of the products has been almost to a dollar total value of the crude in 1920, which was \$1,400,545,000. As a matter of fact, the producer has absorbed a loss in his crude oil as shown above of approximately \$880,000,000.

In an ideal economic world the shrinkage of the consumers' expenditure would be evenly apportioned over all items of cost entering into the retail price. The largest portion would fall on the producers, the next largest on the refiner, the next on transportation and a proper share on taxes, dealers' profits, etc. Unfortunately, reductions are not made that way. Substantially all of the tremendous curtailment in the amount of

money supplied the industry by the public has fallen upon the refiner and the producer of the crude.

The consequence is that in general neither one is operating at a profit today. Unless he has a flush production the owner of wells in the Mid-Continent field is finding it difficult to get his production costs and amortization charges back on \$1 oil. The refiner, with a surplus of capacity and a considerable over-production of everything but gasoline, cannot realize prices that would enable him to continue permanently in the business under present conditions.

Even with the reduced capacity at which some refineries are operating the stocks of crude and finished liquid products are rapidly rising. On December 31, 1920, according to the Bureau of Mines' figures, there were 59,208,496 barrels. On May 31, 1921, there were 83,107,720 barrels, an increase of 23,899,224 barrels, or 40 per cent, in five months.

The law of supply and demand is always seeking equilibrium. It is working now by reducing production so as to increase the value of the oil for sale. As business recovers it will supply more money to the refiner through a re-awakening of sub-normal markets for products other than gasoline. It is working to bring down the cost of drilling and the expense of refining by lowering living costs and so making it possible for labor to work more cheaply.

In conclusion, it must be obvious that the oil industry today is influenced by an economic readjustment against which it is useless to complain. There is never an exact equilibrium for very long between supply and demand. So long as the demand exceeds supply the tendency of prices must be upward; when there is a surplus the tendency of prices must be in the other direction.

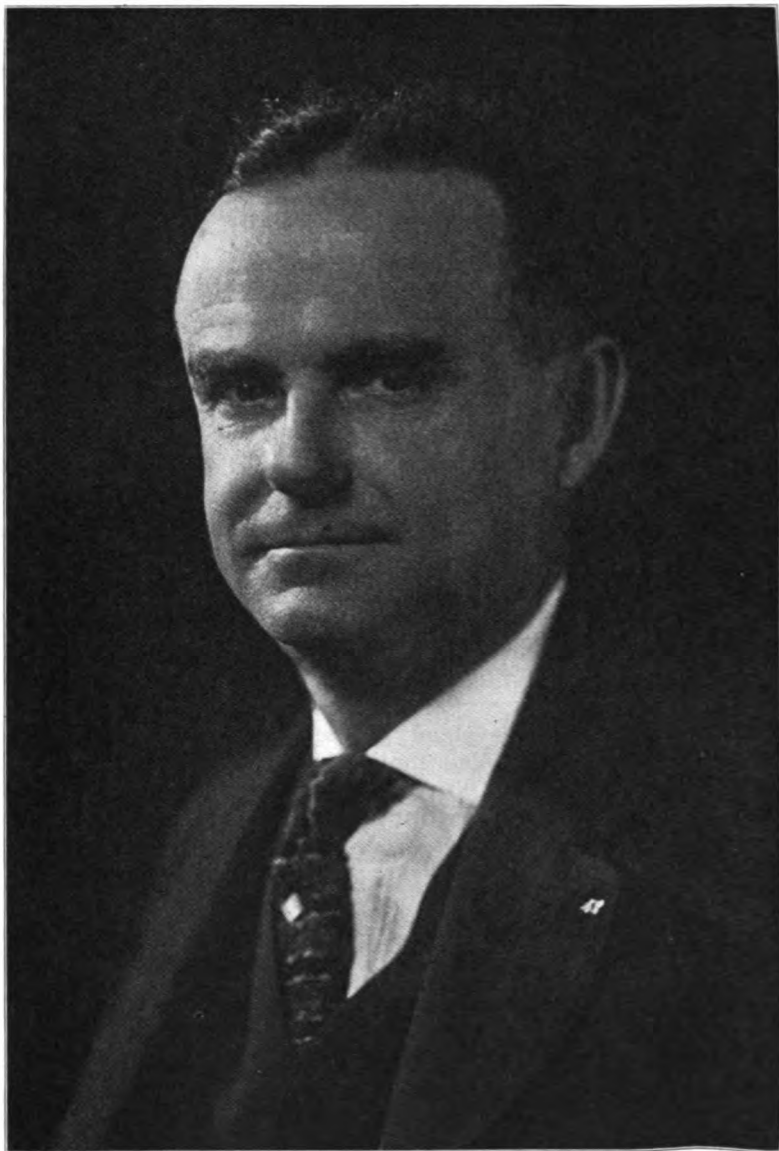
The correct method of ascertaining whether an equilibrium, an over supply or an under supply exists is to ascertain whether the volume of revenue in dollars from the public is just sufficient or is greater or is less than the amount required to carry the industry on a cash basis: that is to say, when there is a deficiency more dollars are being offered by the public than there are barrels of oil at existing prices to satisfy the demand; therefore, prices go up. And when there is a surplus more oil is being offered than the public demands, and the dollars offered shrink because of competitive price cutting. And in those rare instances where there is an exact equilibrium the flow of dollars is equal to the flow of oil.

The point that most people miss in arguing for lower priced gasoline or higher priced crude oil is that the refiner is not in a position to fix either the prices he is to pay or the prices he shall receive. The prices are fixed by the consuming public.

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The Columbus office of The Ohio Fuel Supply Company held its annual picnic at Glenmary Park on Saturday, September 24th. There was a baseball game, horse-shoe pitching contest and other amusements, and a fine catered chicken dinner was served. Even the rain did not dampen the ardor of the picnickers to have a good time.

## Who's Who in The Gas and Oil Business



**MR. JOHN B. CORRIN,**  
Vice President,  
The River Gas Company

## Courts and Public Utilities Commissions

The Commission decided its Advanced Utility Rate Proceeding No. 41, wherein, upon protest of villagers of Wilmington, Ohio, the following rates for artificial gas of The Wilmington Gas Light and Coke Company, filed to become effective December 1, 1921, were suspended:

Consumers of less than 1 M. cu. ft.....	\$2.60 per M.
1 M. or more .....	2.50 "

Discount for prompt payment, 10c per M.  
Minimum charge, 75c per month.

Which schedule increased the rates established February, 1919, as follows:

Less than 1 M. ....	\$1.50 per M.
1 M. or more .....	1.28 "

Discount, 10c per M.  
Minimum charge, 50c per month.

The Commission prescribed the following schedule to be substituted for the suspended rates:

1st M. cu. ft. per month .....	\$2.25 per M.
Next 9 M. cu. ft. per month .....	2.15 "
Over 10 M. ....	1.75 "

Discount, 10c per M.  
Minimum charge, 75c per month,  
and directed the company to refund all excess collections.

Thomas H. Westlake, Cleveland, the Secretary of the newly organized, The Andover Gas Company, filed application of his company for authority to issue, as fully paid \$30,000.00 common stock of the corporation in payment of the agreed consideration for the natural gas property situated in Andover township, Ashtabula, Ohio, at one time operated by The Northeastern Oil and Gas Company and heretofore authorized to be abandoned by the Commission.

The application is accompanied by an inventory ascribing a value of \$32,934.18 to this property.

### NEW YORK GAS COMPANIES WIN BIG VICTORY

The gas companies of New York and vicinity which sued to establish their rights to charge more than 80 cents per 1000 cubic feet for their product supplied to consumers won a victory July 29 when Abram S. Gilbert, special master appointed by the United States District Court, handed up his final reports, holding that the cost of production of gas by the contesting companies has exceeded and does exceed 80 cents per 1000 feet and that to enforce that rate will be in violation of the Constitution of the United States, Article I, section 10, and of the Fourteenth Amendment to the Constitution.

Article I., Section 10, prohibits any State from passing any ex-post

facto law or any law impairing the obligation of contracts. The Fourteenth Amendment prohibits any State from making or enforcing any law which shall deprive any person of property without due process of law or deny to any person within its jurisdiction the equal protection of the laws.

Mr. Gilbert recommends that the plaintiff gas companies be granted authority to increase their rates. The suits involve application for increase of the 80-cent rate established by the law of 1906, so that the increases may cover 1919, 1920 and the portion of 1921 elapsed at the time of filing of the suits, as well as the elapsed period following and hereafter.

Actual cost of production of gas by the several plaintiff companies cost to make and distribute, the special master reports: Standard Gas Light Company, 1919, 92 12-100 cents 1000 cubic feet; 1920, \$1.0355; 1921 (January) \$1.2729; the East River Gas Company of Long Island, 1919, \$1.1048, and 1920, \$1.1560; the New Amsterdam Gas Company, 1919, 94 47-100 cents; 1920, \$1.0231; the New York Mutual Gas Light Company, 1919, \$1.0076; 1920, \$1.2510, and 1921 (January) \$1.2946.

The Queens Borough Gas and Electric Company filed with the Public Service Commission its new tariff, under which it proposes to charge \$1.31 per 1000 cubic feet, with a minimum service charge to consumers of \$1 a month in place of the existing rate of \$1 per 1000 cubic feet and a minimum service charge of 40 cents per month.

E. R. Curtin, President, The Lima Natural Gas Company, filed an appeal of his company from the ordinance, passed July 18, 1921, by Council of the City of Lima, Ohio, fixing rates for natural gas for three years from and after September 1, 1921.

The ordinance provides the following rates:

1st 5 M. cu. ft. ....	55c per M. cu. ft.
Next 5 M. cu. ft. ....	60c     "
Next 5 M. cu. ft. ....	65c     "
Over 15 M. cu. ft. ....	75c     "

All subject to a discount of 5c per M. cu. ft. if paid by 10th of month. Minimum charge, 50c per month.

The ordinance prescribes 950 B. T. U. as minimum heating value of the gas and provides for a reduction of bills for previous month 33% where test shows failure of this heating value. There is also a pressure prescription of 4 ounces and provision for a reduction of bills 33⅓% in event of failure for 36 hours to maintain such pressure.

The company is now operating under a 3-year ordinance, expiring August 31, 1921, providing the following rates:

Domestic: November., December, January, February, March and April.

1st 25 M. ....	50c per M. cu. ft.
Next 5 M. ....	60c     "
Over 30 M. ....	70c     "

May, June, July, August, September and October,  
50c per M. cu. ft.

In addition, the company has a commercial rate of

1st 10 M. ....	50c
Over 10 M. ....	40c

At the time of the establishment of these rates, the company attempted



to establish a readiness to serve charge of 35c per month, approved by the Commission and afterwards stricken out by the Supreme Court of Ohio on account of a technicality.

The ordinance rates are attacked as unjust, unreasonable, confiscatory and unlawful. The company recites, at length, its lack of a producing field and the late agreement with the Medina Gas & Fuel Co. for a supply of gas at 45c per M. cu. ft., the only means it had of obtaining gas for Lima, and resulting in a positive loss if the company is required to operate under the ordinance, leading to the assertion that, if the rate cannot be adequately increased, the company must apply for authority to discontinue the furnishing of service.

The Commission has ordered an appraisal of the property, as of September 1, 1921, with the unit prices the fair prices for the five years preceding the effective date of the ordinance, and will withhold assignment of the matter until a tentative valuation can be announced.

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### NEW RATES FOR KOKOMO, IND.

The Public Service Commission of Indiana, in a decision rendered recently, declined to authorize the Indiana Natural Gas and Oil Company authority to put into effect a proposed price of 85 cents a 1,000 cubic feet of gas instead of the present 35-cent price, to the Kokomo Gas and Fuel Company, but authorized the Company to increase its price to 41 cents. Likewise the commission declined to authorize the Kokomo Gas & Fuel Co. to increase its schedule of rates varying from \$1.00 to 65 cents to a new schedule 40 cents higher for each 1,000 feet, but authorized the company to sell all its gas at \$1.00 a 1,000 regardless of consumption. The Kokomo company buys gas for distribution from the Indiana company which is a producer of natural gas.

Commission's Order—In its order the Commission said:

"Although the supply of natural gas in the vicinity of Kokomo will probably be exhausted within five years, the obligation rests upon the Kokomo Gas and Fuel Company to maintain an adequate gas service in Kokomo at all times in the future, either by the erection of an artificial gas plant to augment the supply of natural gas as it fails or by arrangements to purchase gas from Chicago with which its system is connected by pipe line, or by other means, since the owners of the Kokomo Gas and Fuel Company and the Indiana Natural Gas and Oil Company, from which it purchases its gas and which owns said pipe line have known for several years that the local supply of natural gas is unreliable."

Conservation Is Aim.—In abolishing the graduated rate schedule of the Kokomo company the Commission acted, it said, to supplant a system whereby rates are decreased for great consumption by a single rate, a 1,000 for all quantities in order to conserve the natural product. The order expressly discourages the consumption of gas for other than household purposes, "especially cooking."

## Ohio Utility Companies Pay Out \$19,000,000 in Taxes in One Year

**\$18,812,949.38!**

**Approximately nineteen million dollars!!**

This tremendous sum is the amount of money Ohio's privately-owned public service companies, exclusive of steam railroads, paid in taxes in one year, 1920, to federal, state, county and municipal governments, according to figures on file with the State Public Utilities Commission and compiled by the Ohio Committee on Public Utility Information.

In reality, it represents the sum the people of Ohio, through indirect taxation, paid to the county, state and nation for the use of electric light and power, natural and artificial gas, the telephone, and city and interurban electric railways. This, because utility companies, of course, must pay their taxes out of their income, and they have no source of income except the money paid by the consumers in rates for services rendered.

### **Will Pay More Next Year.**

Many more millions will be paid by the utility companies in taxes for 1921, if valuations, just fixed by the State Tax Commission, are permitted to stand, as the new valuations, in most instances, are much higher than the old ones.

Most Ohioans, already overburdened with taxation, do not stop to think that a big percentage of the dollar they pay for light and power, gas, communication and electric transportation services, goes directly to the county, state and federal government in taxes, the public service concerns merely acting as a collection agency.

When a consumer of services furnished by privately-owned utilities pays his monthly bill, he is helping support the county, state and federal governments. When he pays a bill for services furnished by municipally-owned plants, he contributes nothing toward the support of these governments, because municipal utilities pay no taxes—county, state or federal.

### **Big Boosts in Valuation.**

Notable among utility companies that have had their valuations greatly increased this year by the state tax commission are the Cleveland Electric Illuminating Co., with an increase of about \$6,000,000; Cleveland Railway Co., with an increase of more than \$3,000,000; Ohio Fuel Supply Co., \$3,000,000; Union Gas & Electric Co., \$3,300,000; Ohio Power Co., \$1,500,000; East Ohio Gas Co., \$1,300,000; Northern Ohio Traction & Light Co., \$2,130,000.

Tax valuations placed on 82 traction companies in the state, many of which have been operating at a loss, some of them on the verge of bankruptcy, show a total increase of \$10,000,000 for the year.

Many utility companies have protested the high tax valuations fixed by the state tax commission on the grounds that they are, in many instances, discriminatory, pointing out that in the majority of the counties in the state real estate has not been reappraised for taxation purposes during the last ten years, while the property of public utilities has been reappraised each

year by the commission at close to its true value in money, and in a big number of cases, at more than the book value.

### Ten Cents Out of Every Dollar.

The tax commission boasts that "no class of property in the state is assessed for taxation nearer its true value than the public utilities."

This is well illustrated by the fact that the electric light and power, natural and artificial gas, telephone and interurban and city street railway companies of the state, out of a total net revenue of \$62,378,644.30, after ordinary operating expenses were paid, gave the state, county, municipal and federal governments close to \$19,000,000 in taxes last year, or approximately 30% of the net revenue.

Some utility companies in the state now are paying out in taxes as much as ten cents out of every dollar taken in.

## New Gas Rate Schedules Filed with the Public Utilities Commission of Ohio

From August 15, 1921, to September 25, 1921

### NATURAL GAS

#### THE COLUMBUS NATURAL GAS COMPANY

**Pataskala**—Schedule effective August 20, 1921. Ordinance (emergency) passed August 1, 1921.  
50c per 1000 cu. ft.  
Discount—5c per M.  
Readiness-to-serve charge—50c a month.

#### Industrial Rate:

45c per M. cu. ft. if not over 1,000,000 cu. ft. is used.  
40c per M. cu. ft. if not over 4,000,000 cu. ft. is used.  
30c per M. cu. ft. if over 4,000,000 cu. ft. is used.  
Above rates subject to discount of 5c per m. cu. ft.  
(Old Rate) 43c per M. cu. ft. Discount—3c per M. No minimum charge.

#### THE EAST OHIO GAS COMPANY

**Cuyahoga Heights**—Schedule effective Sept. 1, 1921. No ordinance.  
First 10,000 cu. ft.—55c per M.  
Next 10,000 cu. ft.—65c per M.  
All over 20,000 cu. ft.—80c per M.  
Discount—5c per M.  
Minimum charge—\$1.50 a month.  
(Old Rate) 37c per M. cu. ft. Discount—2c per M. No minimum charge.  
**Garfield Heights**—Schedule effective Sept. 1, 1921. No ordinance.  
(Both new and old rates same as for Cuyahoga Heights)

**Newburgh Heights**—Schedule effective Sept. 1, 1921. No ordinance.

(New rates same as for Cuyahoga Heights)

(Old Rate) 40c per M. cu. ft. Discount 5c per M. Minimum charge, 50c.

**Fairview**—Schedule effective Sept. 1, 1921. No ordinance.

(New rates same as for Cuyahoga Heights)

(Old Rate) 40c per M. cu. ft. Discount—5c per M.

Minimum charge—80c a month, subject to discount of 10c per M.

**North Olmsted**—Schedule effective Sept. 1, 1921. No ordinance.

(Both new and old rates same as for Fairview)

**Rocky River**—Schedule effective Sept. 1, 1921. Ordinance (emergency) passed Aug. 16, 1921.

(Both new and old rates same as for Newburgh Heights)

**West Park**—Schedule effective Sept. 1, 1921. Ordinance (emergency) passed Aug. 16, 1921.

(Both new and old rates same as for Newburgh Heights)

**Cleveland, Ohio**—Rates effective October 1st.

These rates are not based on any ordinance, but are temporary prices in accordance with an order and subject to the terms and conditions of the Court of Appeals of Cuyahoga

County, entered on the 15th day of September, 1921, in the case of the City of Cleveland v. The East Ohio Gas Company, and are to be effective only so long as the company is required by injunction to continue service in the City of Cleveland.

50c per M. cu. ft. for the first 10 M. cu. ft.

60c per M. cu. ft. for the second 10 M. cu. ft.

80c per M. cu. ft. for all over 20 M. cu. ft.

Rates subject to a discount of 5c if paid before a certain date.

Minimum charge—\$1.50.

East Cleveland—Same rates as Cleveland, effective October 1st.

#### JANTHA LIGHT & FUEL COMPANY

Yellow Springs—Schedule effective Sept. 19, 1921. Ordinance passed Sept. 1, 1921.

For the first 5000 cu. ft.—60c per M.

Next 5000 cu. ft.—65c per M.

Next 5000 cu. ft.—70c per M.

Next 5000 cu. ft.—75c per M.

Next 5000 cu. ft.—80c per M.

Next 5000 cu. ft.—85c per M.

All over 30,000 cu. ft.—90c per M.

Discount—5c per M.

Minimum charge—70c per month, subject to discount of 10c per M. (Old Rate)—First 5000 cu. ft.—45c per M.

All over 5000 cu. ft.—40c per M.

Discount—5c per M.

Minimum charge—40c per month.

#### THE LOGAN NATURAL GAS AND FUEL COMPANY

Dover (Cuyahoga Co.)—Schedule effective August 27, 1921. Ordinance (emergency) passed Aug. 18, 1921. First 10,000 cu. ft.—55c per M.

Next 10,000 cu. ft.—65c per M.

All over 20,000 cu. ft.—80 c per M.

Discount—5c per M.

Minimum charge—\$1.50 per month.

(Old Rate) 38c per M. cu. ft. Discount—3c per M.

Minimum charge—70c per month.

#### THE OHIO FUEL SUPPLY COMPANY

Lore City—Schedule effective August 16, 1921. Ordinance passed July 12, 1921.

50c per M. cu. ft.

Discount—5c per M.

Minimum charge—50c a month.

(Old Rate) 45c per M. cu. ft. Discount—5c per M.

Minimum charge—80c a month.

### ARTIFICIAL GAS RATES

#### THE EAST OHIO GAS COMPANY

Talmadge Township, Summit County, Ohio—(Manufactured gas) Schedule effective August 27, 1921.

\$1.30 per M. cu. ft. Discount—5c per M.

Readiness-to-serve charge—50c a month.

(Old Rate) \$1.05 per M. cu. ft. Discount—5c per M.

Readiness-to-serve charge—50c a month.

## Tulsa, a Lesson For All

In considering reports emanating from Tulsa as to the hardships of this depression, one should bear in mind the background. Tulsa has ridden to her prominence on the waves of three big oil developments: Glenn Pool, Cushing, and the general development of the state, the past two years.

It is a solid, but still a boom town. It has some of the finest office buildings in the world, some of the largest banks, and a very large number of fine homes. Tulsa, like all of the oil industry, has built herself to stay. Nevertheless, its building and its development has been influenced by the boom of the industry.

As in all booms, many people have come to Tulsa for a quick fortune and a great many have gone away without it. All classes and conditions of people have come there, some to operate legitimately, some to operate illegitimately—just seeking to get some quick money with the least possible effort and regardless of method. This, consequently, when the uplift of the market was on, tended to speed up everyone's activities, everyone's ideas, and everyone's expense.

The man who made the big money set the pace for the man who made

less, and in the course of time for those working on small salaries. Landlords seized on the opportunity to get enormous rents for mediocre places. Costs generally went higher than elsewhere in the country.

But the big thing is that the public there lost the true perspective on the value of a dollar. The policy was to spend every dollar on the chance of making a thousand for each one spent. The town and most of its inhabitants have been living beyond their income, or if not beyond it, then right up to it, letting their expenses crowd their income. Thrift was practically unknown. As long as the price of oil stayed up the average man refused to see the gathering storm. When the price of oil was cut, incomes were cut—not only incomes of big operators, but incomes of employes. People were put out of work.

But the expenses had become so great that the contraction, coming as suddenly as it did, called for most drastic measures. Housewives had to let first one and then another maid go, chauffeurs were fired, cars were put up, banks were unable to continue to loan increasing sums of money. They had to demand payment of their loans. Payment in most cases was practically impossible.

The hangers-on of the industry who were interested only in the easy gain left town if they had the money. So that apartments are for rent, houses are vacant, and the merchant is having to slash his prices to move his goods. The town has deflated all of a sudden like a county fair balloon. No wonder the town talks gloom. Anyone would be filled with gloom if they had to cut their living expenses in half in 60 days' time and had a lot of debts yet to pay.

All of this has started many rumors. One small bank that wasn't any too well operated has been taken over, but the big banks of the town are conservatively steadying the deflation as much as they can, at the same time keeping the town's financial structure in excellent shape.

Despite all the suddenness of the deflation, there is really only one sizeable financial mixup. That is the case of an oil broker who played the game pretty hard, operated on large loans, and suddenly found himself facing a half million dollars of debts, with no money and no assets, and he is being taken care of by his creditors granting him a year to work it out.

There are a number of financial difficulties, but all of much less size. Considering the hundreds of millions of dollars of business done through Tulsa, the large number of people and the large amount of credit being used in operations, this we submit is a most gratifying condition.

The moral to be drawn is the necessity for thrift, for sound business methods, and the setting aside of a reserve, whether it be by the individual employe or the big corporation. If some companies had followed that policy, and if the inhabitants of Tulsa as a whole had carried systematic savings accounts, there wouldn't be the gloom in Tulsa today. Consequently reports from Tulsa must be discounted. It's all oil in Tulsa, and when oil goes up or goes down they forget the rest of the world—and the rest of the country is reported in better shape every day.

But Tulsa's fine buildings and fine business institutions will stand, and will stand for years to come as the biggest monuments to the public eye of the wealth, growth and stability of the oil industry.

## Notes of the Industry

### Villa To Try Oil

Pancho Villa, one time bandit extraordinary and of late a peaceful farmer, has decided to make a try for oil. His present plan is to drill three wildcat wells on his great farm in Durango to which he retired when he made peace with Obregon.

Villa has sent an agent to Houston to purchase drilling equipment and is arranging with the government to drill. P. C. O'Rourke, J. C. Quinn and L. L. McDonald, American geologists, have been working out formations for him, as Farmer Villa, who now operates tractors, American reapers, and other machinery on his place, has become a great believer in "the scientific."

### Import Tax Bars U. S. Fuel Oil Out of Mexico

The Mexican government has effectively barred American fuel oil out of Mexico by placing a tax of \$3.16 a barrel on all importations except for the National Railways. For several months Texas refineries had been selling fuel oil freely south of the Rio Grande.

### 14-CENT GASOLINE

### Fort Worth Companies War on Each Other With Costly Results

Fort Worth is probably getting cheaper gasoline than any other city in the country, or perhaps in the world. The schedule for retail gasoline is now 14 cents, as compared with 18 cents for other north Texas cities.

The low price is due to a local fight which started two weeks ago,

but which had its beginning several months ago when one local dealer began selling gas at 15 cents, 3 cents below the schedule and within 1 cent of the tank wagon price. Several other dealers, principally suburban, soon met the 15 cent price and the dealers who maintained the 18 cent schedule soon experienced a heavy loss of gallons.

Late in August the Star Refining Co. with nine drive-in filling stations cut the price to 14 cents. This was soon followed by the Magnolia with twelve stations and the Triangle T Company with five stations.

The tank wagon schedule was made 14 cents less 2 cents. The fight promises to be interesting and probably of considerable duration.

### Test by Molasses

When an inspector with a stick and a jug heaves into sight the gasoline dispenser may begin to quake. It may mean trouble. H. H. Motter, state inspector of oil in Kansas, and his chemist-aids have made a discovery.

It comes from this—molasses is soluble in water but isn't in gasoline. Wherever it is suspected that there may be water in the bottom of a tank the inspector wets his stick with molasses and puts the stick down in the tank.

If there's water at the bottom of the tank it eats away the molasses. From the gasoline line up the molasses sticks to the stick. Mr. Motter says he's found considerable water and that a good many gasoline sellers, innocent enough presumably, have been selling water to their customers.

**Gas Consumption Falling Off**

Oklahoma City.—Heavy reduction in the sale of industrial gas, taken in connection with a falling off in the market for domestic gas forced the corporation commission to grant rate increases to the natural gas companies at Dewey and Guthrie within the past week, or permit these companies to conduct business at a loss with ultimate demoralization of service. The Guthrie Gas Light, Fuel and Improvement Company not only showed that demands for industrial gas at Guthrie had fallen to about one-tenth of former sales but that the sales of domestic gas, for the first seven months of this year, were only 76.1 per cent of the sales for the first seven months of 1920. The commission issued an order increasing the domestic rate at Guthrie to 48 cents per thousand cubic feet. The Dewey rate was also fixed at 48 cents.

**City Will Control Gas Situation**

On and after September 26, the City of Hamilton, Ohio, will cease selling gas to the Hamilton Service Company. This was decided by the city council.

The Hamilton Service Company has been purchasing gas from the city and reselling it to some 500 consumers. Recently it was announced by the Hamilton Service Company that it would shut off gas September 26 to repair mains.

Under the provisions of the contract by which the Hamilton Service Company purchases the gas, notice of discontinuance of contract must be given 15 days in advance. The city served notice that it will discontinue selling gas to the Hamilton Service Co., September 26.

After that date, the city will be the only distributor of gas within the city limits.

**BELGIAN-AMERICAN COMPANY ORGANIZED****Coke Ovens Corporation Employing Piette Process Launched With \$10,000,000 Capital**

The Belgian-American Coke Ovens Corporation has been formed by a group of American and foreign capitalists to introduce and develop in this country the Piette by-product coke ovens. The company will have a capitalization of \$10,000,000 of preferred stock and 200,000 shares of no par value common stock.

Included among the directors are Thomas F. Ryan, Emile Francqui, president of the Banque d'Outremer and director of the Societe Generale of Belgium; F. S. Landstreet, president; Hector Prud'homme of Brussels, vice-president; Herbert H. Vreeland, associate of Mr. Ryan; Oliver Piette, inventor of the oven; G. H. Walker, president of W. A. Harri-man & Co.; Adolph Stoclet, representing Belgian interests; Lambert Jadot, director of the Banque d'Outremer, and William H. Page, general counsel.

Mr. Ryan and Mr. Francqui have been associated for many years in extensive developments in the Belgian Congo. Their attention was directed three years ago to the Piette coke ovens. Mr. Landstreet then went to Belgium and Mr. Piette with his associates visited this country, with the result that the company was formed.

The Piette processes, according to a statement, tend to reduce costs materially. By-products of the ovens are used as bases for dye-stuffs, explosives, drugs, etc.

**Public Ownership of Utilities**

President Tittoni of the Italian senate, who is lecturing at the Institute of Politics at Williams College, has brought from his native land an interesting contribution to the ques-

tion of municipal ownership and operation of public utilities. Italy has been making an elaborate trial of the plan, he says, and more than 6000 plants in that country are owned either by the city or state. As the experiment has been continuous over a term of years, in large and small places, and under varying economic and financial conditions, he based his conclusions on abundant experience, has many facts and a rich history. And he says the policy will not bring the advantage to the patrons they had been made to believe would be theirs.

The weakness in the plan is human and he pointed it out with unusual frankness. The trouble Italy has met and been unable to overcome is that it cannot secure men as managers who have due regard for the public purse. They have little regard for expense in planning, or in operating the plants. Italy has found the impression among her managers is much the same that is so often found in public men in other countries, who appear to think that public money is easy money. They do not plan and direct the venture as they would be compelled to if they were in the employ of private corporations. They throw the money away in unwise extensions and other expenses and have brought failure to many such ventures. The strength of his position lies in the abundance of the history at his command, the number of examples he has seen and studied, the varying conditions he has seen these ventures meet and the general result in the country. It is much the same conditions that are met in this country. The shipping board and the railroads illustrate the easy money idea that prevailed in some minds in this country. Where a deficit may be made up from the public treasury lies a temptation few men are able to withstand.

### **GAS WELL AT PAINSVILLE-ON-THE-LAKE ONE OF THE BEST EVER DRILLED IN THIS SECTION**

**Flows Approximately 500,000 Feet a Day and When Capped Showed a Pressure of 60 Pounds**

The new gas well on the property of Contractor P. W. Rust at Painesville-on-the-Lake drilled in recently is probably one of the two best gas wells drilled in Lake county in many years. The other well was recently drilled on the George Harrison place at Mentor Park.

The Rust well is down 470 feet and has been lighted for the past three days. The roar can be heard half a mile and the flame shoots into the air twenty feet or more, lighting up the surrounding country for a considerable distance.

The well was capped and mains will carry the supply to at least ten cottages at "Cosey Corner" in the near future for cooking, lighting and heating purposes."

The new well has not apparently effected the supply at Township Park. The well cannot be drilled deeper as it is impossible to force water into the well to continue the process. It has blown out temporary plugs several times and when this has happened the roar has been deafening.

### **Forget Parents' Sins, College Head Urges**

"The most fruitful cause of antagonism between the public and many privately owned utilities lies in the earning power of 25 and 30 years ago of public utilities, which no longer exists," says Dean M. E. Copley, of the University of Michigan.

"In the early days public utilities were wont to exercise all sorts of schemes to earn more dividends and, when their dividends had grown to such size that the public began to



criticise, the utilities would increase their capital stock issues.

"Now, no sane man will stand for watered stock as it was sometimes watered in those days. But that was in the long ago when a public utility was run like any other business, when the investor was in it to get all out of it he could.

"The public generally believes that the public utility corporation is making a claim to earn on vastly more than is invested. It claims the stock is watered. This might have been true once. It is absolutely untrue today. Everyone believes he could run a public utility, and we criticise from the very depths of our ignorance. I ask you, is that the right attitude to take about what we know absolutely nothing

"Look at the question of public utilities with the same degree of sense you look at other business problems. No public utility corporation today should be charged with the sins of its parents of 50 years ago."

### Price of Gas

Says the Saturday Evening Post editorially under the caption, "Gas Bills":

"Whatever the consumer's personal feeling may be, it stands to reason that he must either be prepared to pay for gas as much as it costs to produce and distribute it or else make up his mind to go without it. Speaking by and large there is no permanent advantage in buying at a price so low that it throws a loss upon the seller, unless, indeed, it is the buyer's avowed purpose to drive the seller out of business."

### Who Uses the Coal?

Industries classified by their use of fuel show some interesting facts. The Census Bureau has prepared such a classification for the "super-power zone"—an area extending from southern New Hampshire and

Vermont southward through the New England States, southeastern New York, eastern Pennsylvania, New Jersey, a portion of Delaware, and central Maryland, to the District of Columbia.

In this area, there are a total of 76,000 industrial establishments using power. Numerically, plants making textiles and their products lead the list, with those manufacturing food and allied products second. In 1919 the amount of coal consumed by plants in the zone was 61,000,000 tons—34,669,000 bituminous, 5,661,000 coke, and 20,909,000 anthracite. In addition, there was 2,822,000 horsepower purchased in the form of electric energy.

Industries making chemicals and allied products used the largest amount of coal, 12,100,000 tons. The manufacturers of iron and steel come second, with 11,500,000 tons. Other industries were:

	Anthracite Long tons	Bituminous Coal and Coke Short tons
Textiles and their Products.....	1,763,000	5,121,000
Stone, Clay and Glass.....	556,000	3,176,000
Food and Kindred Products.....	1,515,000	1,793,000
Paper and Printing .....	765,000	1,967,000
Non-Ferrous Metals .....	883,000	1,545,000
Railroad Repair Shops .....	435,000	835,000
Leather and its Products .....	147,000	650,000
Liquors and Beverages .....	345,000	401,000
Lumber and its Reman- ufacturers .....	86,000	356,000
Government Institutions .....	24,000	407,000
Laundries .....	178,000	239,000
Vehicles .....	107,000	238,000
Tobacco .....	39,000	40,000

### Valuations Decline

A decline of \$4,487,670 is shown in the valuation of Ohio pipe line companies, due to the depletion of some of the gas fields, according to the figures on file with the state tax commission. The valuation for 1921 is \$38,889,490, as compared with \$43,377,160 the previous year. Five of the nine companies listed show decreases, the most severe decline being that of the Buckeye Pipe Line Co., whose 1921 valuation is \$21,853,250, as compared with \$25,163,360 in 1920.

### **Joins Pure Oil Company**

H. J. Guthrie, who has been vice president and general manager of the Tide Water Oil Sales Corporation, has become associated with the Pure Oil Co. and will have charge of the nationalizing of the sale and advertising of Pure Oil branded products. The new department of Pure Oil will have its headquarters in the home offices, located in the Pure Oil Building at High and Chestnut Streets.

### **Export of American Coal**

The total value of the coal sent in the year ending with June 1921, was \$434,563,000, and consisted of 34,434,000 tons of bituminous coal consigned to foreign countries, 9,435,000 tons of bituminous for bunker use on ships, and 4,878,000 tons of anthracite. This amounts to about 10 per cent of the total amount mined for the same period.

The statement continues, "While export prices were as high as an average of \$10.67 per ton for bituminous in October, 1920, they declined rapidly in recent months, falling to \$5.68 in June 1921.

### **British Export Decrease**

"This big increase in 1921, is due in part to the fact that the British coal exports have been greatly reduced during the past year.

"British coal exports (exclusive of bunker) in the 12 months ending with June, 1921, were less than one-half as much as those of the United States, while in 1913 her exports were three and a half times as much as ours.

Our exports of bituminous to the four principal coal importing countries of Europe, Italy, Belgium, Sweden and Switzerland, were 8,000,000 tons in 1921, against 5,000,000 tons in 1920, and less than 1,000,000 in 1919, and the 1921 value of bituminous sent to these countries standing at

\$93,000,000 against \$3,500,000 in 1919.

### **South American Exports**

"South America, takes large quantities from us, the value of our bituminous coal exports to Argentina, Brazil, Uruguay and Chile alone having been in 1921 \$39,000,000, as against \$16,000,000 in 1920, and a little over \$1,000,000 in 1913. Canada continues our largest single customer for coal, the value of bituminous sent to Canada in 1921 having been \$97,000,000.

Bunker coal increased, the quantity having advanced from 5,821,000 tons in the fiscal year 1918 to 9,435,000 in 1921.

### **Gasoline Production**

Production of gasoline for the first five months of 1921 was almost 400,000,000 gallons greater than for the same period in 1920. On May 31, 1921, there were stocks on hand of 800,495,787 gallons, compared with 577,671,975 gallons on May 31, 1920, the total this year being the highest reached in the history of the industry.

### **Mr. Gormley Accepts New Position**

Mr. M. J. Gormley, Director of the Division of Transportation of the American Petroleum Institute, has resigned to accept immediately the Chairmanship of the Car Service Division of the American Railway Association, with headquarters at Washington.

Mr. Gormley has rendered conspicuous service to the petroleum industry and his loss will be keenly felt by those branches of the industry interested in railroad transportation. He has possessed at all times the entire confidence of the Board of Directors and of the staff of the Institute. His new work gives him larger responsibilities and opportunities.

### Big Gas Well Struck in Peace River District

One of the biggest gas wells of the year was discovered when the drill pierced the main gas lode at 897 feet in Peace River Petroleums No. 2 well. The flow of gas is now estimated at 30,000,000 feet a day.

Earlier in the week a flow of gas estimated at about 6,000,000 feet was struck at 867 feet, but deeper drilling brought in the big gas.

This discovery is an important one for Western Canada, as cities and towns for hundreds of miles around are now assured of an adequate supply of gas and the electrifying of the E. D. and B. C. Railway, long contemplated, is now made possible through the abundance of fuel.

### Mexican Oil Taxes

The Association of Producers of Petroleum in Mexico reports that the Mexican combined "Ad Valorem" and specific export taxes on the principal products, with the 10 per cent additional "intalsificable" tax added, are approximately as follows:

(U. S. Currency)

Heavy crude, per bbl.....	23½ Cts.
Light crude, per bbl.....	36¾ Cts.
Heavy fuel, per bbl.....	26 Cts.
Light fuel, per bbl.....	29 Cts.
Gasoline, (refined), per gal 1¾ Cts.	
Gasoline, per gal.....	3½ Cts.

In some cases these taxes amount to considerably more than the present prices of the oil at the well and slightly more than the current price at the Mexican ports, which of course, includes not only the value at the well but also the cost of pipe line transportation from the field to the sea-loading stations.

### Oil Output World Figures

Oil production throughout the world in the first six months of 1921

is at an annual rate 1,775,000,000 barrels, according to estimates. This is an increase of 162,000,000, or 26 per cent over war-time yearly average.

Although efforts to increase the output have been general throughout the world the United States and Mexico are chiefly responsible for the gains. They have increased their production of world production 94 per cent this year, as indicated by the first six months.

This year represents the first let-up in consistent gains in consumption since the pre-war period from 1911 to 1914. Pending readjustment in general industry throughout the world, petroleum producers now are letting up in effort to add to production.

Over production is accentuated in the United States by growing excess of imports over exports, which in the first six months of this year is at the rate of 64,000,000 barrels for the year, against a 13,000,000-barrel average in 1919 and 1920.

### Spend \$8,292,000 in One Year to Increase Gas Supply

Natural gas companies of the state spent \$8,292,000 during the year 1920 in an effort to increase for Ohioans the available supply of natural gas, according to figures compiled from records on file with the state public utilities commission.

The money was spent in drilling new wells.

During the year, 691 new wells were drilled by the companies operating in Ohio. Natural gas men say that the average cost of drilling a well varies between \$12,000 and \$15,000.

Of the wells drilled in 1920, 314, almost half, were non-productive.

This means that \$3,768,000 was spent by the gas companies without

getting a cubic foot of gas, figuring \$12,000 as the cost of drilling each well.

During the year, the Ohio Fuel Supply Co. drilled 357 new wells, of which 194, more than half, were non-productive. The Logan Natural Gas & Fuel Co. drilled 75 new wells, of which 17 were non-productive, while the East Ohio Gas Co., which obtains the most of its supply from West Virginia, drilled 60 wells, of which 21 were non-productive.

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#### **Mid-Continent Oil & Gas Association Selects Dallas, Texas, for Meet- ing in October**

Dallas has been chosen for the 1921 convention of the Mid-Continent Oil and Gas Association to open on October 14. A committee of prominent oil men has been appointed to make arrangements and to draw up a program for the annual banquet, speakers and other activities.

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#### **Dr. F. G. Cottrell in Europe to Learn About Gas**

Dr. F. G. Cottrell, of the National Research Council, has been in Europe for some weeks making an exhaustive study of the foreign method for the utilization of helium gas. The doctor also represents the United States Bureau of Mines.

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#### **Look Who's Here! Ole Hanson Be- comes an Oil Man**

Ole Hanson, former mayor of Seattle, has obtained oil rights on 50,000 acres of land in Mexico. He plans to move his family to Los Angeles where he has established business headquarters.

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#### **Oil Will Be Burned on Giant Liner Majestic**

Oil fuel will be used on the Majestic, the 56,000-ton liner now be-

ing completed in Hamburg for the White Star Line's Southampton-Cherbourg-New York service. Her forty-eight boilers will consume 5,700 tons of liquid fuel in a single crossing, and her storage tanks will have capacity for a round voyage supply. About 275 men, from the chief engineer to boiler room attendants, will be required to run the huge power plant, as against the 460 men who would be required if coal were burned.

---

#### **CUTTING THE COST**

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##### **Natural Gasoline Plant Built Out of Parts Salvaged from the Discard**

Ingenuity often is a development of conditions and headwork can bring its own reward. What is claimed to be one of the cheapest natural gasoline plants ever built has just been completed by the Invader Oil Corporation at its Burkburnett refinery.

According to B. Frank Wood, president, this plant has a capacity of 400,000 cubic feet per day and cost, complete, \$951.34. The engine that runs the compressor was salvaged from a burned power house and put in first-class condition at an expense of less than \$50.00. The compressor was secured from a defunct company for \$250 in gasoline.

The condenser coils, making tanks and traps were made up out of old casing, tubing, drill pipe, etc., with the company's welding outfit. A good coat of paint was then applied and an attractive, efficient little plant was the result.

Such a plant erected a year ago with all new equipment, shipped by express, would have probably cost from \$10,000 to \$25,000.

## Scraps Picked Up Here and There by the Office Cat

Down in the mouth and feelin' blue  
Bereft of joy and light?  
Remember Jonah—He was too,  
But he came out all right.  
—Edgar S. Kindley.

The speaker of the British house of commons is obliged by custom to give seven official dinners each season to the members of parliament.

It is estimated that in England more than 200,000 pounds of weight of paper are used yearly for the manufacture of cigarettes.

Chinese destroy annually about \$10,000,000 worth of gold by their custom of burning small pieces of gold leaf on certain anniversaries.

One of the old Greek laws provided that, if a man divorced his wife, he could not marry a woman younger than the discarded partner.

Concrete that is poured about steel or iron in construction does not adhere to the metal like glue, but as it surrounds it and is contracted in setting and drying, it has the metal in a firm grasp that can be released only by breaking the entire concrete covering.

The Westinghouse Electric and Manufacturing Co. in New York turns out monthly over eight thousand electric meters, in each of which two sapphires are used, thus utilizing more than sixteen thousand of these jewels every month. This is a remarkable fact which demonstrates

that the gem industry has some curious and important ramifications.

One of the stories told of Julius Caesar was that he could write a note or order and at the same time dictate six others to his secretaries and it has often been claimed that Napoleon had much the same ability.

Electricity says the U. S. Geological Survey, saves the nation about 41,000,000 tons of coal a year.

### Preparing for the Harvest

The long wisp of artificial grain on the sweet girl's hat was placed horizontally, so that it tickled the face of the man who sat next to her in the street car, until it came to a resting place with the end nestling in his left ear.

After a time the man was seen to remove from his pocket a large jack-knife which he proceeded to strop on the palm of a horney hand.

Excitedly the girl inquired: "Why are you doing that?"

"If them oats gets in my ear again," the man ejaculated, "there's going to be a harvest."—Exchange.

The investigating scientist reports that brick chimneys in most cases lean slightly toward the east and he has learned the reason, the lack of perpendicular being caused by the more rapid drying of moisture each morning on the side first exposed to the sun, the quick drying causing a slight shrinkage that ultimately shows.

# PITTSBURGH METER COMPANY

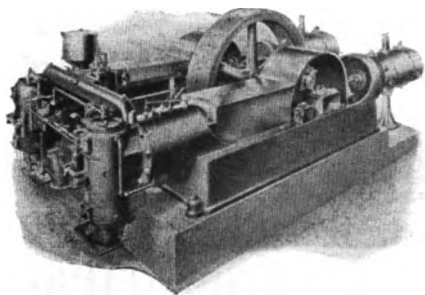
We are prepared to furnish you with meters for measuring your production and distribution of Oil, Gasoline or Gas. Advise us as to your requirements and we shall be pleased to supply you with detailed information.

**General Office and Works, East Pittsburgh, Pa.**

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LOS ANGELES, Union Oil Bldg.  
SEATTLE, Ry. Exchange Bldg.



*Illustration shows 150 B. H. P. Twin Type Single-Acting, Four-Cycle, Gas Engine Compressor Unit*

## **20% More Power**

Direct Connected Compressor units deliver 100% of the power developed in the Engine to the Compressor Cylinder Piston Rods—as against only 80% in the case of Belt Driven units. Besides, Direct Connected units reduce buildings, foundations, pipings, labor and the complete cost of installation.

In the face of these facts should there be any question about the relative merits of the two types?

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**C&G**  
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MT. VERNON, OHIO  
Oliver Bldg., Pittsburgh

*Since 1833 Engineers and Builders*

## The Fulton High Pressure or Reducing Regulator

Sometimes it is thought best to supply the consumer direct from the well or field lines under extremely high pressure, often 300 or 400 lbs. or more to the square inch. It is best and safest to reduce this line pressure of say 10 to 50 lbs. before the gas enters the house service regulator.

For this purpose we offer our new Fulton High Pressure or Reducing Regulator of the Spring Type, which has some advantages over the lever and weight type. It is more compact and costs less for transportation,



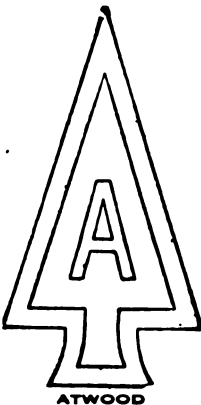
there being no heavy string of weights to go with it. It is not so liable to be tampered with, either by accident or design, when placed in exposed positions in the field. It is also somewhat cheaper. This regulator has been greatly admired wherever used. It will stand with a large margin of safety up to 600 lbs. per square inch. It is easily and quickly adjusted. Will take any outlet pressure between 10 and 50 lbs.

**THE CHAPLIN-FULTON MFG. CO.**

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**THIS TRADE MARK is your GUARANTEE of VALVE AND FITTING VALUE.** It means that you cannot buy a better valve or fitting than the one on which it appears--and it appears only on the **PRODUCT WE MANUFACTURE.**

**Pittsburgh Valve,  
Foundry & Construction Co.**  
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**ENGINEERS**

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Nationally known for the Excellency of its Cuisine.

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**BLUE WATER GAS PLANTS  
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If it is  
for the  
Oil Country,  
"Oilwell"  
makes it  
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Any Size  
Any Depth  
Anywhere  
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## **Oil Well Supply Co.**

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**BRANCH STORES IN ALL OIL FIELDS**





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**Labor Cost Talks**

## **SIMPLE CONSTRUCTION**

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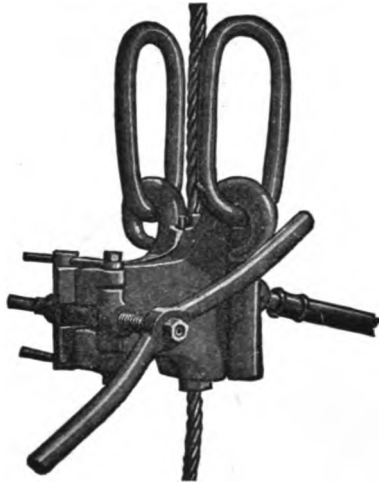
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firms whose ads appear herein. They are all old,  
reliable companies whose integrity is unquestioned  
and whose products have withstood the test of  
time.**

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*Oil and Gas Well Supplies*

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## **THE KELLEY WIRE LINE CLAMP**



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Slips cannot pull out, yet their removal is simple and quick operating.

Made of cast steel giving amazing strength.

Balances perfectly when hung from rings, either open or closed.

Heavy Pattern 180 pounds, Light Pattern 148 pounds.

The tightening device feature of this clamp will save time of driller in hitching and unhitching full one-half as against any other clamp made.

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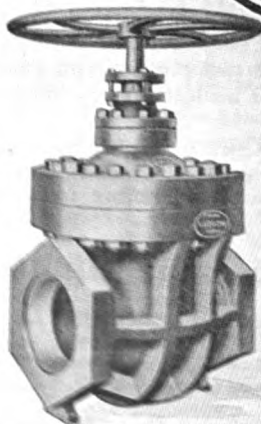
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# SURVIVAL OF THE FITTINGS

*The success in putting out the great fire in the Amatlan Field of the Mexican oil fields, was entirely due to the merits of LUDLOW VALVES.*

*The valves on the both wells which were on fire are still being used to regulate the flow of oil. No other valve could have withstood such a severe strain.*



## Challenge Working or Upper Lock Crown Valve

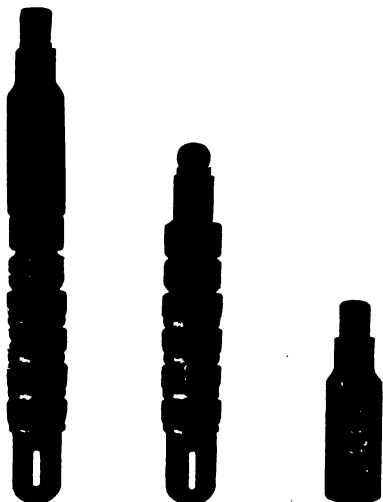


Fig. 35

This Valve is made in two main parts only—the Crown and the Barrel.

The bottom and the barrel are made in one piece, therefore the cups and rings cannot come off in the well.

The crown screws directly on to the barrel, which is of uniform diameter, and is locked in place with a wide hexagon lock nut.

The extension on crown below pin is the same diameter as valve barrel and is added to enable both crown and barrel to be caught with one combination socket in case the crown should become unscrewed, or to catch the crown if pin should break off. The ball and seat do not interfere as is the case in the old style valve.

We believe this to be the most practical and simple lock crown valve on the market.

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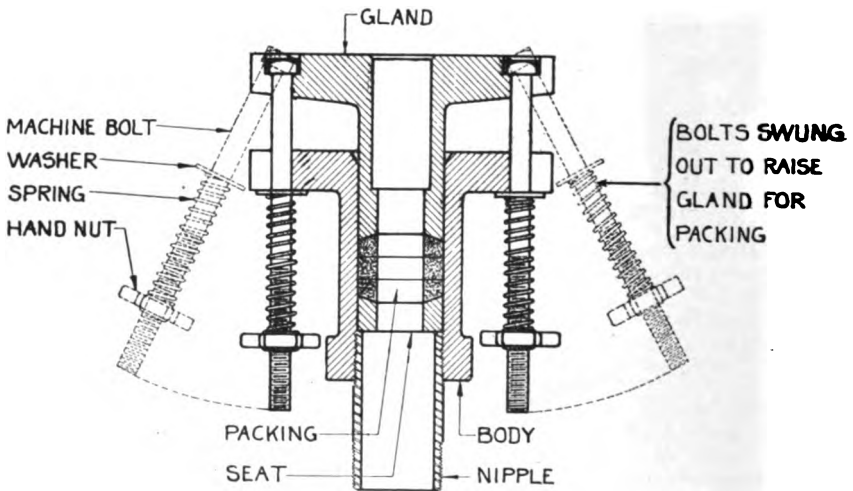
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*Sectional View of Titus Stuffing Box Showing Loose Seat Construction*

**Simple in design.**  
**Self adjusting.**  
**Prevents oil-waste.**  
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**Safe for pumper.**

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# The OHIO GAS AND OIL MEN'S JOURNAL

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THE OHIO GAS AND OIL MEN'S ASSOCIATION, COLUMBUS, OHIO

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## AFTER NATURAL GAS--- WHAT?

It is not ordinarily appreciated that the natural gas industry is serving, generally, towns that are too small to maintain manufactured gas plants. Manufactured gas plants could not be built and operated in towns under 5,000 population and at the present time it would not be desirable to build a manufactured gas plant in even a 5,000 population town. Of the 2,180 towns in the United States that have natural gas, 1,944 are under 5,000 population and are, therefore, too small for manufactured gas and must go without gas service when natural gas is gone. These towns represent about one-half of the natural gas consumers in the United States.

State	Number of towns over 5,000	Towns too small	Domestic consumers in towns over 5,000	Domestic consumers in towns too small for Manufactured gas
Alabama .....	0	2	0	102
Arkansas .....	6	25	21,000	742
California .....	13	57	96,200	164,567
Illinois .....	5	23	8,600	69
Indiana .....	15	106	25,000	6,032
Kansas .....	22	113	78,000	52,350
Kentucky .....	11	44	77,800	13,049
Louisiana .....	2	17	7,600	16,770
Maryland .....	2	13	5,400	
Missouri .....	6	9	76,800	3,238
Montana .....	0	3	0	1,198
New York .....	13	134	131,200	38,108
North Dakota .....	0	1	0	6
Ohio .....	68	459	455,200	430,676
Oklahoma .....	12	110	38,200	82,307
Pennsylvania .....	39	505	242,600	238,675
South Dakota .....	0	2	0	391
Texas .....	11	49	55,200	24,655
West Virginia .....	10	267	31,600	95,568
Wyoming .....	0	5	0	999
	235	1,944	1,350,400	1,169,512

## Gas Service Costs In a Rate Structure

Prepared for the Canadian Gas Association.

by L. R. Dutton, Jenkintown, Pa.

### Introduction

There is an old adage that "Necessity is the mother of invention," and someone has coined and added a modern adage that "The public utilities mother all industry."

If invention is considered from the viewpoint of the gas man, as the devising of methods of **measurement** of or **charges** for gas service over the past hundred years; and if the gas industry is accorded its proper recognition among public utilities, surely "Mother" has led an active life.

Necessity created by the economic conditions existing during the preceding five or six years has been productive of more thought and study being devoted to the **costs of service, value of service** and methods of **charges for service** than for a generation previous.

To obtain a proper perspective from which to discuss this subject in a manner that will be the most fruitful in results, to those patient enough to listen, we believe it wise to conduct you on a brief journey of mental sightseeing; on this journey we will witness a few historical facts with respect to the period uses of gas service, the method of measurement and charge for the service from the early days of the industry.

### Historical Review

In this review, beginning with the introduction of gas for general lighting, it will be noted that there has been a constant effort to reach a determination of the cost, and apply the charge equitably and justly to the consumer.

Our earliest history relates the first confinement of natural gas in beef bladders; later this same method was used when gas was generated in an experimental retort. The puncture of a hole in the bladder, and the exertion of pressure thereon followed by the application of a flame at the opening, produced the first gas light.

In the beginning of the gas industry—about 1802—gas was furnished to the premises of the customers through pipes, and used by them through burners or orifices of a given size, and contracted for at a rate for a stipulated number of hours per burner per night. A personal inspector was employed to check up and advise customers when his selected time to retire had arrived and shut off his light.

"It will readily be understood that the contract system was fruitful of complaint and disagreement between the companies and their customers, and that unscrupulous consumers reaped advantages at the expense of the companies and beyond what their more honest neighbors cared to appropriate. In this way the introduction of some method of measurement by automatic and inexpensive means became a matter of pressing necessity."

### First Gas Meter

With the need established, a meter was soon constructed, and about 1815 introduced to customers who desired uninterrupted use of light at night, free from hindrance of inspectors, and who desired to pay for what they used.

"It will be safe to assert that, without the meter, the use of gas would never have attained its present vast development. It is equally true, however, that the gradual extension of gas lighting, due to its excellence, and even from the first, its economy, its cleanliness and the facility attending its application and employment, rendered the invention of the meter an absolute necessity."

With the introduction of the meter there was established the recognition that there were direct cost elements in furnishing gas service, in contrast to the factory or store making or furnishing a commodity; this led to charge of a meter rental plus a charge for gas.

It is interesting to note the following article from The American Gas Light Journal Vol 1, No. 3, Sept. 1, 1859, which shows how appropriate were the arguments used by gas men in those early days, compared with present times, when a two-rate system of charging is first introduced, containing a "Service Charge."

### "The Wrongs of Gas Consumers"

"The first and greatest source of complaint on the part of consumers is the charging a rent for the gas meters, on the ground that it would be quite as just and reasonable for the dealer in dry goods, groceries or liquors to charge for the use of his measure in supplying those commodities.

"But the cases are not analagous. The dealers in those articles measure their commodities at their own counters; one measure answers for all, and the cost is trifling. Not so with gas companies; they must have a measure for each customer, and for his exclusive use, and they must keep it in order at all times. The meters in use in this city alone have cost some half a million dollars. If the grocer had to furnish each customer with a complete set of weights and measures, and to leave them in that customer's house, he would expect to be paid such a sum as would be equivalent to an interest on their cost, and the expenses of ordinary wear and tear. The business of a gas light company is emphatically a retail business. It is true they might (as some companies do) charge such a price for the gas as would cover the use of the meter, the cost of keeping it in order, and replacing it when worn out; but this plan would not be as equitable as the present one, and for the following reasons: The meter is often much larger than is requisite for the ordinary consumption, for it must be of sufficient capacity to supply all the gas that may be required, whenever, on special occasions, all the burners are lighted. This may be but once in a year, perhaps but once in several years. In stores, in workshops and in some few dwellings, the meters are of such sizes only as are sufficient for the daily wants of those to whom they are furnished. In our public markets, and in many private butcher shops, gas is burned only on Saturday nights, and in some offices and public rooms and buildings it is but seldom used. There does not, therefore, exist any relative proportion between the size and consequent cost of the meter and the amount of gas consumed, yet



everyone must have a meter large enough to give him all the gas he may desire, and at any time, when his business or pleasure may require it.

"Gas companies charge, therefore, for the gas according to the quantity consumed, and for the meter a rent proportionate to its cost. Some of the English companies do not furnish meters, but compel customers to purchase them of the manufacturers. During the past year the citizens of London have petitioned Parliament to compel the companies to supply the meters and to charge a rental for their use; and the charters last granted contain clauses requiring the companies to furnish meters, and specifying the rent—following, as nearly as may be, the course which ours have found to be the most just and reasonable. Our gas companies have, in a few instances, sold meters, and would gladly do so now, but for the trouble to which they are subjected whenever one needs to be repaired. If every customer would find his own meter, and keep it in order, it would be of great relief to the companies; but when a meter needs repair, it often happens that it costs as much as it is worth, while the owner can be rarely convinced that such is the case; and the companies are compelled to lend him one until his own is returned, or leave him in darkness. An experience of some twenty-two years has proved that our present system is the best, because it is the most convenient to the public, and the most equitable."

### **Uniform Meter Rate**

The early days of the meter also developed the "uniform meter rate" per unit irrespective of quantity used. It should be noted since there was only one use of gas (light) and it was used at only one period (night), it was easier to include all the costs per unit.

A survey of the rate schedules now in use by many companies indicates that they have seen no development that requires them to depart from this charter of rate, and in passing we call attention to the fact that here we introduce the first recognition that a charge, based upon the differentials of service, has played an important part in the development of larger gas sales.

### **Gas For Fuel**

The inventor had been busy, and developed burners to use gas for cooking and heating, and a study of the ability of the gas industry to compete with solid fuels, coupled with the desire of the consumer to use a fuel for comfort in the warm months of the year, demonstrated that gas could be made and supplied in day time at a much lower cost to the consumer.

### **Two Meter System**

The gas that was furnished for fuel did not require any large capital outlay in plant or mains, very little more labor to operate the plant, and the largest additional cost was for gas-making materials. It was determined to make a much lower rate for gas sold for fuel in day time and install a separate meter to measure the gas used.

### **Minimum Charge**

Larger sales of gas were easily stimulated by this plan; about this same time there was introduced the mantle light which greatly reduced the gas used per burner for light. The use of the second meter for only a portion of the year also added force to the need for the introduction of the charge of a monthly minimum which permitted the consumer to use a small quantity of gas to be included in the charge.

The next period of development was the establishing of a minimum bill and a step or block system of charge for gas in quantities used through only one meter.

### **Recognizing Fundamentals**

During all these years there were those who devoted study to the problem of rates, and during the past twenty years intensive studies have been made by representatives of various State regulatory bodies until now we have a large store of material on rate making. By analyzing this material carefully, we are able to determine the fundamental principles upon which rates should be based.

There is general agreement on certain broad principles involved, and also in the recognition of the fact that proper rate structures are a large factor in stimulating **increased sales of gas**, as well as furnishing needed revenues for the company.

### **Rate Structure Requirements**

1. "Produce the desired revenue.
2. "Distribute the burden equitably among the various customers and do so without unnecessary complications in the schedule or its application.
3. "Recognize local conditions, retain and develop existing business and attract desirable new business."

### **Analysis of Detail Cost**

Having stated the historical developments of the industry and the requirements of a rate structure, we should remind ourselves that it has been the practice of most companies to devote great care in the system of accounting by analyzing and comparing costs in the various sub-divisions of the company, thus seeking to detect and eliminate losses or increase slight economies in operation.

### **Total Cost of Operation**

Valuable as this information may be, it does not cover in a comprehensive manner the total cost of the operation, nor can it form a basis of building rates or determining if all or any classes of business are served at a loss or at a profit, and it is the purpose of the writer to call attention to the need of analyzing the total cost of conducting the enterprise by an example of a going company of average size.

It is generally recognized and generally agreed to, that an analysis of the costs of gas service will disclose three distinct and definite elements of costs, viz.:

- A—Customer costs.
- B—Demand or capacity costs.
- C—Commodity or output costs.

J. M. Spitzglass calls these the three departments for clearing expenses, in the following quotation:

"Perhaps the best method of apportioning the expenses is to imagine the company as being actually divided into three independent departments:

"One: For taking care of the customer's applications, billing, collecting, attending to complaints and the various other items that each customer is liable to require an equal share of attention.

"A second department for taking care of the customer's capacity and for providing the necessary equipment which, for the sake of economy, is provided in a measure to take care of the needs of all the customers collectively with a sufficient allowance for safety.

"The third department for taking care of the manufacture and the delivery of the product for consumption.

"By clearing all accounts through these three departments, the major part of the expenses would naturally classify itself directly under the proper sub-divisions. Certain items would refer to two departments, and some would refer to all three, but these could justly and adequately be pro-rated over the direct expenses of each department."

H. E. Ehlers, in his paper, makes the following analysis of these three groups, viz.:

#### Output Cost

"Included in this group are costs that are practically proportional for cubic feet of gas delivered and that do not vary with the demand of the consumer or with the number of consumers of the company, such as all or a large portion of the costs of production, some of the costs of distribution and the fixed charges, or a portion, depending upon the circumstances of the plant and distribution system.

#### Demand Costs

This group includes costs that vary with the demands made upon the system by the consumer and that are not affected directly by the quantity consumed, and that do not vary directly with the number of consumers. In a large measure, these costs are made up of certain portions of the cost of operation and of interest and depreciation charges on a large portion of the property.

#### Consumer Costs

This group includes costs that are particularly proportional to the number of consumers and that are not affected by variation in the consumption or in the demand, such as the cost of reading meters, billing, collecting, etc., maintenance of meters, maintenance of services and the fixed charges thereon, as well as some portion of the miscellaneous office expenses and general expense."

#### Comparison of Costs by Different Rates

TYPE A		TYPE B	TYPE C	
Gas Consumed Cubic Feet.	Uniform Meter Rate.	Customer Charge \$1 Block Rate	1st 100 Cu. Ft. \$1 Block Rate.	Cust. Char. \$1 Prepay Rate \$1
100	.13	\$ 1.10	\$ 1.10	\$ 1.10
200	.26	1.20	1.20	1.20
300	.39	1.30	1.30	1.30
400	.52	1.40	1.40	1.40
500	.65	1.50	1.50	1.50
600	.78	1.60	1.60	1.60
700	.91	1.70	1.70	1.70
800	1.04	1.80	1.80	1.80
900	1.17	1.90	1.90	1.90
1,000	1.30	2.00	2.00	2.00
1,500	1.95	2.50	2.50	2.50
2,000	2.60	3.00	3.00	3.00

TYPE A		TYPE B	TYPE C	
Gas Consumed Cubic Feet.	Uniform Meter Rate.	Customer Charge \$1 Block Rate	1st 100 Cu. Ft. \$1 Block Rate.	Cust. Char. \$1 Prepay Rate \$1
2,500	3.25	3.45	3.50	3.50
3,000	3.90	3.90	4.00	4.00
4,000	5.20	4.80	5.00	5.00
5,000	6.50	5.70	6.00	6.00
6,000	7.80	6.55	6.95	7.00
7,000	9.10	7.40	7.90	8.00
8,000	10.40	8.25	8.85	9.00
9,000	11.70	9.10	9.80	10.00
10,000	13.00	10.95	10.75	11.00

### Gas Rates

All Regulatory Laws and Commissions created thereunder have had as a basic principle for their creation the removal of discrimination among customers, as to rates and methods of service.

Until the men of the gas industry fully recognize what this means and make some analysis of their rate problem along the lines suggested, they are not taking the required steps to enable them to comply with these laws.

The following quotation is from Mr. F. C. Freeman:

"It cannot be justly denied that each customer of a public utility should adequately pay for what he gets. If a customer does not pay his just share of the outgo expenditures of a utility, someone else will have to if the utility's income is to equal its outgo. Outgo expenditures shall be considered as including all operating and maintenance expenses, replacement reserve, and fair return on fair valuation. It is manifestly unfair to ask one customer to pay any of the costs of any other customer. It does not require very much study and analyses of the system of gas rates in use today by all gas companies, with but few exceptions, to show that the large majority in number of their customers pay less than they should of their share of the outgo expenditures and that the small minority make up the difference by paying more than their share.

"The gas industry is a monopoly, but do not overlook the fact that it is a gas monopoly, and is not a fuel and lighting monopoly. It is important to keep this fact clearly in mind.

If a customer will not pay his just share of the costs which he has caused, he must be able to obtain a like and similar service for fuel or lighting from some other source at a lower cost. This applies to the large customer as well as it does to the small customer. Coal, coke, oil and electricity are in active competition in all phases of the gas industry. It is, therefore, highly important that gas rates should be formed on an equitable basis for all classes of customers if the industry is to maintain itself and grow as is demanded of it by its economic position in the welfare of society.

Rates should be—

Just  
Reasonable  
Sufficient  
Non-discriminatory and  
Non-preferential

A reasonable and just rate is one that is just both to the utility and to the customer.

It must be sufficient in that the income will at least equal the outgo.

It must be reasonable in that the items of outgo are fair and warranted for the circumstances and conditions under which the utility operates.

It must be sufficient to encourage additional investment in the service of the public.

A rate must not be preferential or unjustly discriminatory by being greater or less than that charged any other person for a like and contemporaneous service. A rate must not be unjustly discriminatory by requiring a certain class or classes of customers to pay for the costs caused by another class or classes."

### Conclusion

In the rate structure proposed by the writer, due recognition has been given to all the above requirements of an ideal rate. It will be noted that different rate structures are proposed to comply with the conditions demanded by different classes of customers or the quantity required by them.

It should be recognized that there is no statutory law and certainly no moral law that requires the serving of any class of customers at less than the cost of that service. Since there can be almost definite determination of the exact costs entering into the various classes of service to customers, it is suggested that each company make an analysis of its cost of the service. After determining the cost to each class, it will be comparatively easy to build a rate structure for each class. This in turn will lead to stimulating and developing increased sales for the company.

"If we expect to hold the customers we have; if we expect to increase the sales to the customers we have; if we expect to secure new business in the face of coke, oil and electricity, and other competition; if we expect to live and grow and best serve the public welfare, it is imperative that we at once become familiar with and install a proper rate structure.

"The sun of the gas industry is just rising, but to those of us who will not be keenly alive to the situation it has practically set."

## OHIO OIL INSPECTION ON TRIAL

The status of oil inspection in Ohio will be definitely settled at a hearing to be held before three federal judges at Columbus next Saturday.

This is the result of a hearing before United States Judge John E. Sater, of the southern district, eastern division of Ohio. The hearing was on a suit brought by Judge C. D. Chamberlin, secretary and counsel of the National Petroleum Association in behalf of the Cleveland Refining Company.

The petition asked an issuance of an injunction to prevent W. H. Phipps, director of the state department of commerce, from exercising the powers of state oil inspector, to prevent him from collecting inspection fees from January until August, 1921, during which period no inspections were made and to restrain him from inspecting oils or collecting fees in future and for the nullification of the state inspection law as unconstitutional.

Judge Chamberlin waived the issuance of a temporary injunction at the hearing on agreement of the oil inspection department not to proceed with inspection or with collection of fees pending the final hearing of the case next Saturday. If the judges uphold the claims of Judge Chamberlin, they will issue an interlocutory order and the case will be returned to Judge Sater for hearing on its merits as a plea for a permanent injunction.

## Gas Making vs. Gas Storage Capacity

By J. M. DICKEY, San Francisco, Cal.  
Before Convention of the Pacific Coast Gas Association

This paper will consider the subject strictly from an oil gas point of view and it will also be confined to the generating man's ideas. When you look over the field and see under what entirely different conditions the oil gas plants operate, you will not wonder that I did not try to cover the coal and water gas man's idea of holders in relation to generators. Another thing, if you consider capacity and location of holders from the distribution point of view, again you enter an entirely different field, consequently this phase of the question will not be considered.

### The Generating Engineer's Point of View

Today, gas is used for lighting, heating and cooking in the home as well as for almost every conceivable purpose in the industrial world. All send-out curves will, therefore, show two distinct peaks morning and evening and others will even show a third peak, not so pronounced, at the noon hour. How simple it would be from a generating engineer's point of view if the send-out curve were a straight line for the whole 24 hours; no peaks and no off hours to consider.

Every plant has its own individual problems to meet and every generating engineer has his own ideas as to how they should be met. Doubtless, no two will agree exactly, but this paper is intended to develop something from which we can work.

### Peak Load Conditions

Starting with a theoretical plant, we will deal with peak conditions only, as every plant is constructed to take care of the maximum load. The send-out figures, percentages I mean, will not apply to every individual case, but are averages derived from reports of last winter's peak conditions in a dozen different plants.

This theoretical plant will have a total generating capacity of 24,000,000 cubic feet, consisting of six units of 4,000,000 each, four operating and two standing by. The maximum day's send-out will be 16,000,000, and the maximum hour 1,600,000. Storage capacity 11,000,000, or slightly less than 70 per cent of the maximum day.

It is understood that there is ample scrubbing capacity, purifiers, oil pumps, blowers and other auxiliaries to take care of this peak load. Blowers, pumps and exhausters should be duplicated, some electrically driven and some with steam and gas engines. Of course there should be sufficient number of scrubbers and purifiers to allow for scrubbers steaming and purifiers reviving.

During the 12-hour period from 7 a. m. to 7 p. m., 11,200,000 cu. ft. of the 16,000,000 maximum day, or 70 per cent, will go out, leaving a balance of 4,800,000 to be sent out during the night. At 7 a. m. the storage holders are full and four generators operating, making 668,000 cu. ft. per hour. The average hourly send-out up to 6 p. m. will be 933,000, therefore, during the 11 hours nearly 3,000,000 will be drawn from storage, leaving 8,000,000 on hand at the beginning of the peak hour.

In some cities the peak hour does not necessarily come in the evening, it may come sometime during the forenoon. This is a decided advantage,

because the earlier in the day it comes the greater amount there is in storage to meet any unusual demand. However, for this particular plant it is supposed to come between 6 and 7 in the evening.

The peak hour send-out, you will recall, is to be 1,600,000, and the plant stands ready to meet it with 500 per cent of that amount on hand.

This comparatively large amount on hand at this time seems to me to be an important factor in the plant operation. If anything is going to happen to the mechanical apparatus, it is more liable to occur during the peak hour, because everything is running at or near maximum speed and capacity. Furthermore, something psychological: The operating crew are keyed up to the highest pitch and if some one of them, unknown to you and perhaps to himself, has a weak link in the chain of his make-up, he may "go to pieces" just at the critical moment and do the wrong thing.

With 500 per cent of the peak hour demand in storage there is little to worry the man in charge. He knows that, if necessary, all of the generators could be shut down entirely until after midnight and still the plant would be out of danger in the morning. It is presumed that in a plant of this size there would be at least two storage holders; should anything happen to one of them it could be by-passed and the plant operated on the other alone until repairs were made.

Four generator units are operating continuously and two are standing by. In a plant with 70 per cent storage capacity, such as we have outlined, it would not be absolutely necessary to keep more than one stand-by unit hot. This one to be alternated with any one of the other four when it is necessary to clean sprays or a washbox, or make repairs. This arrangement makes it possible to shut down each unit every three or four days. The sixth generator should be kept ready, during the two months of maximum output, to make gas on short notice, although it may never be used throughout the whole season.

### **Relation Between Generating and Storage Capacity**

One point that I want to bring out very decidedly is the very definite relation between generation capacity and storage capacity regardless of the size of the plant and the amount of the maximum output. This definite relation is required in order that the greatest generating efficiency may be obtained. Storage capacity should always be great enough so that when a generator or generators are started it will be possible to maintain continuous operation until the day's work is done and not have to be shutting down an hour or two or three during off hours because the holder is full. This applies whether the day's work is 12, 16 or 24 hours long.

In a small plant, where one generator will make sufficient gas for the day's output in 14 or 16 hours, the storage capacity should be enough so that the generator could be started in the morning, when the day's send-out began, and continuous operation maintained until 10 or 11 p. m., with no shut down in the afternoon because the holders are full. In larger plants, where several generating units are operated day in and day out, the storage capacity should be sufficient to give plenty of room in off hours to keep the correct number of units generating straight through the 24 hours.

Make the storage take care of the peaks and valleys in the send-out curve and earn interest on the investment the holders represent by saving oil per 1000 on the gas made through continuous operation of the generators. This appears to me to be as equally important a duty for storage capacity to perform as that of reserve in case of accident.

(Continued on Page 36)

## **Cuba Abounds in Evidences of Oil Existing in the Subsoil Known Prior to Arrival of the Spaniards**

**By JOSE ISAAC CORRAL**

**Mining Engineer, Chief of Bureau of Mines and Forests, Republic of Cuba, Havana**

**(California Oil World)**

From remote times there have been found in the soil of Cuba numerous superficial signs that testify eloquently to the possibility of finding petroleum beneath in commercial quantities sufficient to insure returns upon the capital invested.

A few years after the island was discovered by the Spaniards the attention of the first colonists was called to the abundant and conspicuous outcroppings of liquid asphaltum, known also as "malt," and in Cuba as "chapapote," which existed in the vicinity of Havana Bay, and which it is claimed was utilized by the companies of Sebastian Ocampo in the year 1508 to caulk the ships of the expedition and to paint the bottoms of the same.

### **Lack of Demand for Product Prevented Move for Development**

At the beginning of the Spanish colonization no importance whatever was attached to the numerous deposits of asphaltum present in different parts of the island because of the limited uses for the product at that time. Previous to the nineteenth century there can be found only slight references thereto in letters by scientific visitors. Baron Humboldt writes of oil wells in the District of Guanabocoa, near Havana, which are probably the same deposits that were found by Ocampo and which were mentioned in 1535 by Oviedo.

### **Cuban Mining Revival at Beginning of Last Century**

Mining in Cuba had a notable revival at the beginning of the nineteenth century, due, undoubtedly, to the economic prosperity felt prior to the War of Independence in 1868. At the same time that several copper, manganese and iron mines were exploited, the attention of explorers was directed to the great number of deposits of asphaltum existing along the north coast of the island.

Since 1869 there have been discovered the asphaltum mines of Guanapay, Province of Pinar del Rio, situated in the lands of the estates of San Jose, San Pablo and Cancio. Little further to the west, in Termino del Marcel, since 1880 there has been exploited by open quarrying an important group of mining concessions producing substantial quantities of asphalt. The mass of the mineral has a thickness of twelve meters and is utilized for the production of illuminating gas and fuel for the ancient sugar plantations of the neighborhood. Close by, on the Tomasita estate, there is a spring of pitch-asphaltum (maltha) or crude petroleum, which is produced in small quantities and used on the property for lighting and other purposes.

In Termino de Banes there are two ancient concessions called San Jose and Constancia. They cover an area lying between the strata of magnesia clays and calcareous glauconites of the cretaceous which can be found at several points in the bed of the River Banes, which, with many twists and



turns, flows serpent-like through the region. From these mines more than 500 tons of asphaltum were extracted. They are now abandoned.

In Havana province, near Campo Florida, since 1868, asphaltum deposits have been known to exist among the cretaceous loams, touching the northern part of the serpentine formation which traverses the District of Guanabacoa from southeast to northwest. According to reliable information more than 18,000 metric quintals (about 1800 short tons) from these mines has been exported to the United States.

In the District of Bejucal there are known deposits of asphaltum mixed with earthy matters and faded in appearance. This appears in masses or pockets, as is generally the case with other deposits of this kind found on the island. Of the same kind of mineral is the concession called Jesus del Potosi, situated in Las Chumbas, half a league south from Campo Florida station on the bank of the Bacuranao river. This deposit has been a matter of record since 1873.

### **First Commercial Quantity of Oil Found on Island of Cuba**

In 1867 the mining concession known as "La Abeja," situated in the serpentine formation of the Potrero de las Minas, was denounced (located and title claimed) for the purpose of drilling for the oil escaping through cracks in the rock, and which investigations indicated would be found in greater quantity. The location of this concession was, in all probability, that of the present "Santiago" property of the Union Oil Company, where for the first time in Cuba commercial quantities of oil were found. About 1880 some drilling was done. In the wells drilled, and chiefly in one, there was found at a depth of 8.5 meters (approximately 28 feet) pitch-asphaltum of good thickness overlying a clayish loam. Underlying the latter at a depth of nine meters there was a serpentine formation similar to that appearing on the surface at several places in the District of Guanabacoa. At a depth of 61 meters (about 203 feet) fuel oil in a form of much greater fluidity than the upper asphaltum was encountered. Drilling continued to a depth of 129.5 meters (425 feet), at which point a cave-in of the walls made it necessary to abandon the well.

Asphaltic signs abound, also, in the Province of Matanzas. Some of the best known since antiquity of these deposits, are those found at the bottom of Cardenas Bay. Their product is of unusual richness, an asphaltum of a brilliant black color and of a conchoidal glassy texture. Coming up in the form of a viscous liquid from the serpentinous material, which appears to constitute a great portion of the bottom of the bay, it is found spread like a covering near certain shoals. The two principal points at which this product is extracted are Cayo Diana and Cayo Cypey. From these two points there has been mined and shipped to the United States about 480 tons of asphalt.

South of Cardenas, at a place called Laquinillas, there was discovered in 1882 a deposit of liquid asphaltum, from which there was extracted an average of 70 liters (18.5 gallons) per day. There are other numerous deposits of asphaltum and oil found in the serpentine formation along the north coast between "Las Bocas de Jaruco" and the city of Matanzas. As an example there may be cited the "barrio" of Corral Nuevo in which there are a number of mining concessions granted for this material.

At Sabanilla de la Palma, east of Cardenas, numerous deposits of asphalt exist in solid form. There are also some of pitch-asphaltum. Some

wells have been drilled here, but the quantity of oil or asphalt developed has been too small for commercial success. A little to the south in the Barrio of Guamutas in 1868 a well was drilled in the serpentine formation. An abundance of pitch-asphaltum fills the crevices and cavities of the rocks.

On the plains, known as Siberia, to the north of Lomas de Botino, a little west of the city of Cardenas, the author has observed the existence of two wells opened in the serpentine formation. A thick cover of crude petroleum floats on the surface of the water found therein. In this place some application for mining registry have been made, but so far, in spite of the remarkable surface indications, no exploration work has been done.

Passing on to the Province of Santa Clara are numerous places where there are outcroppings of asphalt and petroleum on the surface. However, to date there has been no drilling whatever for oil in this province.

Here will be mentioned first the famous asphalt mines of Placetas, located on the El Tamarindo estate. These properties have been exploited on different occasions since 1890. More than 5,000 tons have been extracted and utilized locally for fuel on the plantations and in railroad locomotives.

Northeast of the city of Santa Clara, there is an asphalt mine, known as Santa Elosia, located in the serpentine rock. It produces a bright mineral used in the manufacture of illuminating gas.

In the neighborhood of Camajuani there are other numerous deposits of asphaltum; also, at Ranchuelo, Laqua la Grande and Caneti Spiritus.

The pitch-asphaltum deposits in the vicinity of the town of Mata are worthy of special mention. The geological characteristics of this locality are such as to justify drilling nearby. The author personally knows the place and believes that on account of the great probability of finding oil serious development work ought to be undertaken.

### **Famous Naphtha Wells Are Great Scientific Curiosities**

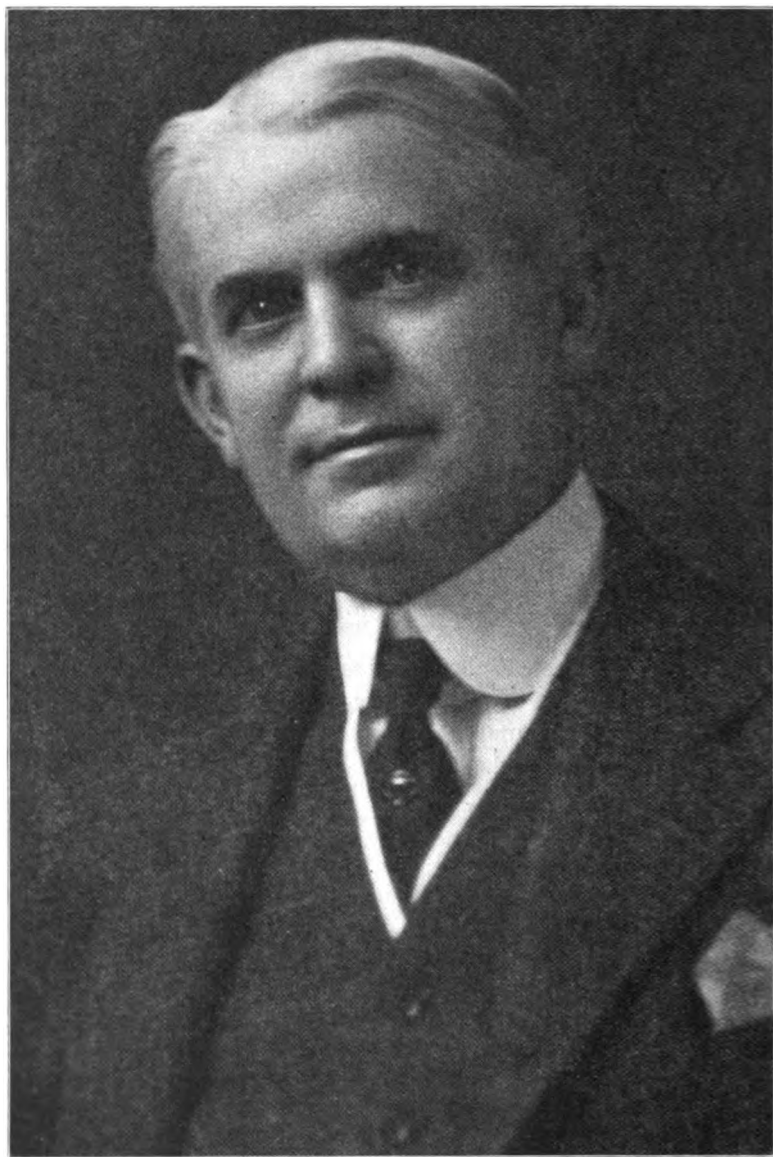
The naphtha wells of Motembo in Termino de Corralillo are the most important in Cuba. They undoubtedly constitute a scientific curiosity, of which there will not be found many duplicates in the world. The deposits have been known since 1880 because of the spontaneous discharges from the earth at various points of combustible gas. Four wells were drilled to a depth of 950 feet, from which there was obtained about 60,000 gallons of colorless naphtha, transparent as crystal water, readily lighted and leaving no notable residum after burning. It has a density of 0.74 and can be used as motor fuel in the same way as the purest gasoline just as it comes from the well without the need of refining or any treatment whatever.

The Revolution of 1895 put an end to all exploration. During its course the camp and the derricks were burned and totally destroyed. In view of a favorable report on the wells made by the author, a new company was formed in 1916, which up to the present time has drilled four wells, varying in depth from 825 to 1100 feet. Each of these wells has more than 800 feet of oil standing in the hole and none of them have been exhausted in spite of continuous pumping.

Proof of the capacity of these wells has been limited by the lack of receptacles for storage of the oil. However, from the data available to the present time it is estimated that the four wells will be capable of producing for a long period 100 barrels daily of oil that is now sold in Havana at 53 cents a gallon.

The topography of the zone of Motembo is mostly level plains and the

## Who's Who in The Gas and Oil Industry



**MR. EMMET R. CURTAIN, President**  
**The Lima Natural Gas Co.**  
**Lima, Ohio**

elevations are slight. The spots where the gas breaks out and where the oil or naphtha appears correspond with the so-called serpentine formation, in which there exist many feldspathic rocks, resinites and chlorites. By disintegration and superficial decomposition these produce a clayish and more or less ferruginous sand. The mother lode is of a fusiform and cavernous appearance, to which the hydrocarbon gases which break through the soil and the atmospheric influences both must have contributed.

All the wells are situated in igneous ground. First, the drill penetrates a diorite of fine grain, then diorite poor in hornblende, until it strikes a well characterized serpentine rock, which has all the colors and decomposition usual to such formation. Feldspathium is found at one time and pockets of magnesium clay at another, but in general, however, the formation is a serpentine of light green color which turns darker with depth. The wells are finished in this rock in which the oil is encountered, and in which it lies on a subterranean plane inclining to the southwest.

Closing these general remarks regarding the abundant indications of the presence of oil on the island, mention will be made here of the asphaltum mines of Jatibonico, situated on both banks of the river of the same name, in the districts of Moron and Sancti Spiritus, as well as those near Mayafigua. Many tons of asphalt have been taken out of these deposits and shipped to the United States.

### **Fruitless Prospecting of Past Has Not Been Conclusive**

Fruitless prospecting operations of the past have been limited in number and are of slight value, quite insufficient to justify a negative opinion regarding the existence in Cuba of oil in commercial quantities. Many of these wells did not get to the depths originally planned by their initiators. Nearly all of them had to contend with great practical difficulties in the effort to get desired results.

Not more than eleven properly drilled wells have been abandoned on account of not getting oil. I have followed closely these operations in Cuba, I am personally acquainted with the places where the results of work have failed to come up to expectations, and I can say that the failures do not furnish proper grounds for discouragement on the part of those persons who plan to carry on further prospecting operations.

The small number of wells constitutes a strong contrast with the great extent of the territory in which are found the indications of oil. This zone has an area of 500 kilometers (310.685 miles) in length and more than 30 kilometers (18.6411 miles) in width on the north coast of the island. Consequently, sufficient data do not exist upon which to deny, as some persons do, that commercial quantities of oil can be found in Cuba. The indications are so numerous, of such character, and are spread over so extensive an area, more than 15,000 square kilometers, that they leave no doubt that the country contains important oil deposits.

Failure at the beginning of prospecting for oil is of no importance in itself, nor can it be accepted as a rule for the future, inasmuch as in all oil-producing countries of today there have been similar failures, as will be seen by a perusal of the literature bearing on the subject.

The indisputable and encouraging fact is that there are already two

places on the island at which it is positively known that oil exists and a third where substantial quantities of naphtha or white oil are obtained.

### **Oil Found at Bacuranao But Wells Fall Off Quickly**

The oil field of Bacuranao (Guanabacoa) is formed by several mineral concessions, of which the most important are the Santiago and the Jorge. The first belongs to the Union Oil Company and the second to the Caribbean Petroleum Company. Substantial quantities of oil have been obtained.

On the Santiago property some twenty-two wells have been drilled to date. The results have varied. In many of the wells oil has been found while others have been abandoned for different reasons. The Santiago yearly production approximates 92,000 gallons, but when the wells were first opened the production was much larger. In other words, the output fell quite rapidly.

Experience was similar on the Jorge property. The wells produced at first about 3,500 barrels of oil per month, but were soon exhausted. However, some oil is being obtained at the present time from these wells and is refined for gasoline by the West India Oil Refining Company.

Oil is found on this property at depths ranging from 600 to 1000 feet and at the contact of the serpentine with the territory strata that forms the north lateral of the Province of Havana. All the producing wells were drilled in serpentine.

Analysis shows the Bacuranao crude oil to be of paraffin base although it, also, contains asphalt. It is rich in light oil valuable for the making of illuminants and lubricants. It can be considered a natural resource of great value.

Many claims have been located around these productive concessions and several companies have drilled many wells, but without getting favorable results.

The importance to Cuba of the Bacuranao oil zone is due to the fact that it is the first place on the island where oil has been found in commercial quantities. I believe that a study in detail of the peculiar characteristics of this field is of the highest importance and that it will have a distinct bearing upon further explorations. With the limits imposed by general scientific principles, it is indisputable that each oil belt has its own laws which should be observed to insure the success of future development.

### **White Oil Found at Motembo Tests from 65 to 75 Gravity**

The white oil or naphtha of Motembo is considered by many persons to be a product of the filtration of the common dark crude, a view confirmed by many experiments. Possibly, Motembo is one of the few places in which this naphtha has been found so far in such large quantities. To date only samples of slight value have been reported, as in Baku, Sumatra, Roumania, Trinidad and Peru.

Motembo white oil or naphtha tests run 65° to 75° Baume gravity. Oil from well No. 1 is light amber in color, that from Nos. 2 and 3 absolutely colorless, and all the oil from the three wells is transparent and of a pleasant odor. The physical characteristics of the oil are similar, but superior to those of the white oil of Baku. The density of the Motembo white oil is from 0.7179 to 0.6829. It comes from the wells free from all foreign matter and may be used in its crude for fuel in internal combustion

## Who's Who in The Gas and Oil Business



**MR. C. W. SEARS, Asst. Gen'l Mgr.**  
**The East Ohio Gas Co.**  
**Cleveland, Ohio**

motors. However, it should be subjected to light distillation before sale in order to separate and conserve the more valuable lighter content from the less valuable fuel.

There are five wells in the Motembo zone producing white oil. Four of these wells belong to the Compania de Gasolina y Nafta de San Juan (San Juan Gasoline and Naphtha Company.) The fifth well was drilled by the Cuban American Petroleum Company. The first four wells have a maximum depth of 1100 feet, the fifth is 1500 feet and its production is smaller.

The oil from the Cuban American Petroleum's Tinguaro well has a light amber tinge, while the product of the other wells is clearer and more transparent. From San Juan wells, No. 2, 3 and 4, it comes up perfectly colorless. From the limited data available regarding this field it looks as if the oil underwent a process of clarification by filtration in the direction from south by southwest to north by northeast.

The oil zone of Motembo is the most important of any found in Cuba to the present time. The indications that there may be found substantial quantities of oil are flattering. There is also the possibility of being able to utilize the gas by extracting the gasoline content, which approaches three-quarters of a gallon to the 1,000 cubic feet.

### **Opposite Hypothesis of Oil's Origin Bear Upon Locating Wells**

There have long been held by engineers two radically opposite theories as to the origin of oil. I would not mention the matter were it not that the adoption of one theory or the other has much practical and important bearing upon the location of wells to be drilled and upon the chances of future success.

Most geologists, especially Americans, accept as most likely the theory that bitumen and mineral oils are the direct result of the decomposition or fermentation of organic vegetal and animal matter. For this reason these geologists ascribe much importance to the classification of the strata and to the existence of fossils in the same. The same geologists hold that anthracite, pitcoal and lignite are formed by the natural carbonization of great masses of vegetals under special conditions of temperature and pressure. According to this generally accepted scientific theory, bitumen, whether solid like asphalt or viscous like pitch-asphalt, brea, malt, petroleum or other mineral oils, are the product of the mixture of naphtha with asphalt, the greater or lesser proportion causing the variations in the viscosity and color of bitumen. Under the same theory solid asphalt is but pitch-asphalt which has lost by evaporation some of its volatile substances and which by the absorption of certain quantities of oxygen has passed from one state to another.

### **Author Differs from American Geologists as to Origin of Oil**

The doctrine of the organic origin of mineral coals, asphalt and petroleum is the hypothesis generally held by geologists who conducted explorations for oil in Cuba and who have located the wells which have been drilled. It is to this, in my opinion, there must be attributed the great number of failures to date.

I believe that the above theory as to petroleum, asphalt and all mineral oils is absolutely fantastic and deceptive with no solid foundation to rest upon, and consider all these products to be of inorganic origin and to have

been formed by chemical reaction occurring between the metallic carbides of the igneous rocks and the currents of water existing in the lands crossed by the crystalline intrusion.

This doctrine finds support in numerous deposits of asphalt, petroleum, and naphtha in Cuba, all of which are found in the serpentine or in the contacts of this metamorphic rock with the sedimentary strata cut or covered by the eruption of the igneous mass.

The fact that oil is found in sedimentary formations of distinct geological antiquity does not prove that it is a product of the decomposition of organic matter existent in such strata. I believe in the migratory character of petroleum, that it passes from the point of its origin in the contacts of the hypogenic rocks to where it is found in the sand or shale. In view of the permeability of these sedimentary layers it is more reasonable to believe this theory than to hold that the oil has been able to penetrate the eruptive rocks which lie along similar lines, but in opposite directions. The impermeability of the crystalline makes the possibility of such phenomena quite doubtful.

There appears to be no need for going into the organic kingdom, either animal or vegetal, to explain the existence of carbon which is so common an element as to be found in crystal form within the mass of eruptive rocks. Experiments in electric ovens at exceedingly high temperature prove that under such conditions carbon will form binary combinations with different metals. In contact with water these carbides form various hydro-carbides. These latter in proper mixture and under special conditions of temperature and pressure will form different substances, such as the various grades of petroleum, the bitumens (solid and liquid, and naphtha.)

Formidable intrusions of hypogenic rocks at various periods have broken and dislocated the sedimentary strata. According to the writer's viewpoint, these are the natural conductors which have drawn from the depths of the earth the metallic carbides from which petroleum originates. The petroleum has migrated from the place of its origin, passed through the most permeable formations nearest its source, and has traveled many kilometers before reaching the deposits in which it is found today. We have always observed the intimate relation which exists between the great deposits of oil and the great extent of the hypogenic eruptions found in more or less proximity thereto. The importance of this relationship is verified by an examination of geological conditions in the United States, Mexico, Colombia, Roumania and other lands having great deposits of oil. In all these countries there are found within more or less proximity to the oil fields extensive masses of eruptive rocks which have passed up through the sedimentary strata in which the oil appears.

The great quantity of organic matter existing in petroleum is not a proof that it originates in animal or vegetal decomposition, but that during its migration from the point of its origin to the place where it is now found, the oil has absorbed from the various strata through which it passed quantities of organic residue contained therein. Being of an aseptic nature, the oil tends to preserve such residue.

Eminent chemists, like Berthelot, Daubree and Mendeleeff, are the authors of this theory of the inorganic origin of oil, which has found such strong confirmation by the examination of the wells and other places in Cuba where oil has been found. Illustrious authors, such as Fuchs and De Launay, credit the doctrine that the accumulations of oil in various levels



of the crust of the world are the result of phenomena of mineral origin, the product of a simple operation of chemical synthesis, brought about without the intervention of organic matter.

### **Past Failures Attributed to Locating Wells on Anticlines**

I attribute the greater number of the past failures of oil companies in Cuba to the mistakes of their geologists and engineers in locating wells on the anticlines of the sedimentary, secondary and tertiary formations existing in the neighborhood of the outcrops of asphaltum and chapapote. The prevailing theory that oil is formed through the decomposition of organic matter and the success which in other countries has attended the application of the anticlinal principle to oil operations have led the majority of the experts to recommend drilling where conditions conform thereto, disregarding the peculiar conditions encountered in Cuba. These conditions make it incumbent upon developers to proceed with great care and in locating new wells to study the dominant characteristics of the producing wells, not forgetting that in each zone the general laws of geology vary in application and the mineral deposits have peculiarities worthy of the utmost attention.

There are many places known to exist on the island where chapapote and oil crop out under the same conditions as at Bacuranao and at Metembo. Nevertheless, notwithstanding the great number of wells drilled in Cuba during the last five years, none have been drilled in the vicinity of these outcrops which remain untested although it is certain that they cover important subterranean deposits of oil.

### **Dry Holes of Past May Point Way to Future Successful Wells**

Failures are always regrettable, as much on account of the loss of the investment as on account of the fact that they discourage capitalists from financing other like enterprises, yet we can not but recognize the fact that the knowledge thus acquired of the geology of Cuba will be highly valuable for future prospectors. Especially valuable will be the knowledge that future work should be guided by different scientific principles than those which have governed the geologists and engineers who located the barren wells drilled by various companies.

The wells of Motembo and Bacuaranao testify eloquently to the fact that in Cuba oil should be sought in the contacts of the serpentine with the sedimentary formations. It should not be forgotten that, while in other countries oil has migrated considerable distances, in Cuba it does not appear to have traveled far from the eruptive rocks in which it had its origin.

It is believed that before seeking oil in the sedimentary strata of the cretaceous or jurassic at great distances from the eruptive rocks, even on a promising anticline, there should be investigated thoroughly the immediate vicinity of the serpentine and the sedimentary formations where the chapapote or asphalt rises to the surface, as it is there, in our judgment, that there are the most probabilities of locating the underground strata of oil, which, even though they may not compare with the famous wells of the United States and Mexico, may be sufficient to lessen the permanent contribution which Cuba has to pay foreigners for fuel.

### **Labor Troubles, Accidents, Bad Finances Prevent Success**

Aside from the foregoing scientific reasons, there have been many material and financial reasons for the failure of many wells which did not reach the depths intended and therefore may not be considered as proving the nonexistence of oil at the sites where they were located. We dislike to say anything about the incompetence of the personnel employed by the companies in the opening of the wells which contributed strongly to the abandonment of many wells started and of others before they were begun. Nor will we here dwell upon the exaggerated demands and abusive impositions of foreign expert drillers which have occasioned much unpleasantness and heavy expense to the companies employing them.

Discussion will be limited to the shortage of working capital experienced by many companies in their efforts to complete projected wells, the result of bad financial organization. Such companies were conceived in a spirit of unsound speculation. Their promoters retained for themselves huge blocks of the stock. When such a company placed its shares on the market the only care taken was along the line of manipulation that would give to the stock a fictitious value enabling the promoters to sell at a high profit the shares which they had kept for their own benefit. Such proceedings were extremely detrimental to the credit of the enterprise, and resulted in the company's funds being exhausted just at the time that they were most needed for the completion of the wells.

Mismanagement of this kind has been one of the most notorious causes of failures in oil development and of the discredit in the public eye of all companies which now seek to sell their stock to raise funds for drilling. On account of the many abuses and swindles perpetrated it will be necessary to allow several years to pass before public sympathy may be expected for enterprises of this kind.

### **Many Places Exist in Cuba Where Oil Should Be Found**

I am fully convinced of the possibility of finding in Cuba oil in commercial quantities sufficient for industrial development and for paying dividends to their discoverers. A review as a whole of what has been accomplished up to the present date will show prospects for the oil seeker which could not be better. In my opinion the best places for the location of wells have been overlooked and no work of any kind has been done there. It can be asserted without fear of exaggeration that the most important showings of oil have never been tested by drilling. Until tested by the experience only to be obtained by such work their possibilities will remain unknown. Personally I know of more than twenty mineral concessions within the limits of which there are found outcrops of chapapote in the contacts of the eruptive rocks with the accompanying sedimentary deposits. In my opinion, these evidences should now be thoroughly tested by deep drilling. However, the fields have been permanently abandoned by their proper owners and no wells whatever have been drilled.

I am thoroughly convinced that the managers of enterprises hereafter started to develop oil in Cuba should lay aside and disregard the rules and practical lessons acquired by drillers and experts in other countries and confine themselves to close and careful study of Cuban conditions. The places on the island where favorable results have been obtained should be taken as models. With this guidance they should be sure to meet with

success. However, they should be careful not to overcapitalize the enterprise by attributing to successful wells a fictitious value greatly in excess of the real one, so that only wells of extraordinary productiveness can pay interest on the investment. As a matter of fact, such wells as have been drilled in Cuba and have been successful in getting results have returned a reasonable interest on the capital actually invested and have made possible its amortization within a brief period.

### **Cuban Law Gives Oil to State, Foreigners Have Equal Rights**

Under the laws of Cuba owners of land have no title to the oil and gas found in their subsoil. Minerals are classed as properties entirely independent of and separate from the soil, and all, including oil and gas, belong to the Nation. Oil and gas rights are granted by the Government to the first applicant, whether national or foreigner, without giving any preference whatever to the former. Land owners may not claim any title to the subsoil.

Concessionaries for oil and gas have the right to require land owners to sell them as much of the surface as may be essential for drilling operations. In case the oil concessionaire and the landowner fail to agree on terms, the law gives the concessionaire the right of expropriation, the indemnity to be fixed by arbitrators named by the two parties.

Land owners desiring to develop oil or gas in their own lands must first obtain a concession authorizing such work from the National Government. In seeking such concessions they have only the same rights as any other person.

To obtain mineral concessions it is necessary only to comply with certain simple formalities and to make a small deposit to cover the expenses of surveying and marking the land. Any foreigner, individual or corporation, may get a concession on the same terms as a citizen of Cuba.

There are no special rules governing lands owned by provinces or municipalities. Such owners are bound by the same rules as others and concessions for oil development on such lands may be obtained on the same conditions as is the case with other lands.

### **Cuban Oil Companies Must Organize on Reasonable Basis**

The contention that a successful well can produce enough to pay dividends upon the millions of shares which companies have thrown upon the market is absurd. Only in the case of a phenomenal discovery, not to be expected in the ordinary course of nature, can this be accomplished. Let companies be organized on a more reasonable and equitable basis and not attempt to do more than to return to their stockholders their investment, together with interest proportionate to the risk which always accompanies enterprises of this character.

I am satisfied that the day is not far distant when new discoveries of oil fields in Cuba will confirm the foregoing conclusions.

## Courts and Public Utilities Commissions

### Another Rate War at Napoleon, Ohio

Council has passed an ordinance fixing the price of gas (artificial) at Napoleon, Ohio, at \$1.50 per thousand cubic feet. The ordinance also includes the rent of gas meters in the new rate.

The minimum price for 500 cubic feet or less will be 75 cents per month. The company may add a 10 per cent penalty on every thousand feet of gas each month where consumers fail to pay bills by the tenth. This ordinance will go into effect on November 1, for two years.

The present rate is \$2.30 per thousand cubic feet. This difference in rates is expected to cause another gas war here.

This is the second time within a year that Council and the Ohio Gas Light and Coke Co. has locked horns over the price of gas.

### Plugging a Dry Hole Landowner's Job, Says Court

El Dorado, Kas.—An oil operator cannot be held responsible for failing to plug a dry hole; that burden falls on the owner of the land. This was the decision here of Judge E. D. Stratford in a case brought by the state vs. a Wichita operator, the first of its kind in a local court in recent years. Violation of the law is punishable by a fine of not less than \$500.

### Wapakoneta Gas Rates

Upon a protest signed by residents of Wapakoneta, Ohio, the Commission suspended the going into effect October 1st of the following rate: \$1.00 per M. cu. ft., plus a monthly readiness to serve charge of 75 cents, which The Wapakoneta Natural Gas Co. has filed. The company's present rates are: Winter, first 25 M. cu. ft. 50 cents, next 5 M. cu. ft. 60 cents, over 30 M. cu. ft. 70 cents; summer rate, 50 cents, per M. cu. ft.

### Tentative Valuation Lima Natural Gas Company

The Commission on September 30 certified the following tentative valuation as of September 1, 1921, with unit prices the fair prices for preceding five years, of the property of The Lima Natural Gas Company in its appeal from the three-year rate ordinance, enacted July 18, 1921:

Reproduction .....	\$1,319,529.82
Depreciation .....	375,982.51
Present value .....	\$ 943,547.31

The company submitted an inventory and appraisal showing only a grand total reproductive value of \$1,955,237.99.

The company formally protested the tentative valuation of its property as fixed by the Commission, asserting that the reproductive and present values are too low; that the depreciation is excessive, and that the valuation is, in other respects, erroneous and unfair to the company. Following is the protest against the valuation filed by the city:

"Now comes the City of Lima, and protests against the tentative valuation of the property of The Lima Natural Gas Company

as certified by the Commission on Sept. 30, 1921, as too high both as a whole and as to the several items therein.

"Said City further objects that the five year period used in estimating the reproduction value is improper and unfair to the City of Lima for the reason that said five year period used as a basis of said valuation shows the highest values ever reached by the several items making up said inventory; that the reproduction value as shown in said inventory is unreasonable in being too low; that the present value allowed is consequently too high and unfair to the City of Lima.

"Wherefore the City of Lima asks that your Commission correct said tentative valuation so as to show the true value of said property."

Hearing on this protest to tentative valuation was fixed for November 14th.

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### **Compulsory Operation of Ordinance Sought**

Compulsory operation of a 30-cent gas rate ordinance passed by the City Council of Cincinnati in 1917, which state and federal courts held to be invalid is sought in a resolution that was introduced at the first meeting of the fall session of the City Council.

The ordinance referred to followed a 35-cent gas rate ordinance passed by City Council in 1916 upon which a referendum was held and the ordinance defeated. The State Public Utilities Commission was appealed to by the Union Gas and Electric Company which held it had no jurisdiction. The passage of the 30-cent gas rate ordinance thereafter was held by the courts to be confiscatory and also ineffective because the previous ordinance upon which the referendum was held was operative regardless of the vote against it.

The courts held in substance that the ordinance was not subject to referendum since the charging of the rate by Council merely was complying with the contract which had been entered into prior to the adoption of the initiative and referendum feature of the constitution.

The same principle is being invoked by the city in its opposition to the referendum against the modification of the street railroad franchise providing for a reduction in fares now pending in the Ohio Supreme Court.

After considerable discussion the gas question was referred to the Committee on Light, Heat and Power for consideration.

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### **MICHIGAN BODY USES PRESENT VALUE** **Important Decision in Grand Rapids Case Favors Gas Co.**

Lansing Mich.—Present day, and not historic, valuation was agreed on as the proper means of arriving at the valuation of a utility by the Michigan Public Utilities Commission in settling the valuation of the Grand Rapids Gas Light Co.

Chairman Sherman T. Handy of the commission held that the present valuation is the fair basis for utility rate fixing, and that the historic valuation of \$4,100,000, presented by the city, will be discarded.

The commission maintained that the city had placed the valuation below

the company's assessed valuation of \$4,400,000 and that no valuation below the assessed valuation would be considered for rate making purposes. It was further declared the courts have continually upheld present day valuation and that their method of arriving at these figures would be followed.

In the matter of rates it was clearly indicated by the commission that they would be lowered, but to what extent it was not possible to judge. A decision will not be made in the matter for a week or two at least, it was said. Whether the temporary rate will set as of October 15, or will be predated as of June 6, it was further stated, was a matter for adjustment between the city and the company.

## The Senate Revenue Bill

The Finance Committee of the United States Senate has reported its substitute for the House Bill on Revenue and Taxation. The repeal of the excess profits tax is postponed until 1922, as it was in the House Bill. The maximum bracket of the surtax is again fixed at 32% for 1922 and the 20% limitation on the surtax in the case of sale of mines, oil or gas wells where the principal value of the property has been demonstrated by prospecting or exploration and discovery work done by the taxpayer, is reduced to 16% for 1922. The provision of the House Bill by which profits derived from the sale of capital assets should be taxed at 12½% has been eliminated and the following provision inserted:

- (b) "In the case of any taxpayer who for any taxable year derives a capital net gain, such capital net gain shall, under regulations prescribed by the Commissioner with the approval of the Secretary, be stated separately from the ordinary net income in the taxpayer's return; and only 40% of such capital net gain shall be taken into account in determining the amount of the net income upon which taxes are imposed by sections 210, 211 and 230 of this title. In any such case the tax shall be collected and paid upon the sum of the amount of the ordinary net income plus 40 per centum of the amount of the capital net gain."

One difference between this provision and the flat rate prescribed by the House Bill is that one who contemplates selling a property during the year cannot, under the Senate Bill, estimate accurately in advance what the tax will amount to on the sale. Under the Senate Bill an operator may have net ordinary income of \$100,000.00 on which his total normal income

tax would be .....	\$ 7,680.00
his surtax would be .....	21,100.00
<b>TOTAL .....</b>	<b>\$28,780.00</b>

If, during the year, he sold a capital asset such as an oil property at a net profit of \$500,000.00, 40% of this net gain would have to be added to his ordinary net income and both normal and surtax computed thereon. Since he had already reached the maximum surtax bracket of 32% with his ordinary net income, the tax on \$200,000.00 of taxable profit derived from the sale

would be, normal tax 8% plus a surtax of 32% or 40% and the tax attributable to the sale would be \$80,000. His total tax, therefore, for the year would be \$108,780. But if such operator had had no ordinary net income during the year, the tax attributable to the sale would be—

on the first \$100,000.00 .....	\$28,780.00
on the second \$100,000.00 .....	40,000.00

TOTAL TAX (all attributable to the sale).....\$68,780.00

Under the House Bill the tax attributable to the sale would be \$62,500 in either event.

The provision relating to depletion as contained in the Senate Bill is as follows:

- (10) "In the case of mines, oil and gas wells, other natural deposits and timber, a reasonable allowance for depletion and for depreciation of improvements, according to the peculiar conditions in each case, based upon cost including cost of development not otherwise deducted: Provided, That in the case of such properties acquired prior to March 1, 1913, the fair market value of the property (or the taxpayer's interest therein) on that date shall be taken in lieu of cost up to that date: Provided further, That in the case of mines, oil and gas wells, discovered by the taxpayer, on or after March 1, 1913, and not acquired as the result of purchase of a proven tract or lease, where the fair market value of the property is materially disproportionate to the cost, the depletion allowance shall be based upon the fair market value of the property at the date of the discovery, or within thirty days thereafter: **And provided further, that such depletion allowance based on discovery value shall not exceed the net income computed without allowance for depletion, from the property upon which the discovery is made, except where such net income so computed is less than the depletion allowance based on cost or fair market value as of March 1, 1913;** such reasonable allowance in all the above cases to be made under rules and regulations to be prescribed by the Commissioner, with the approval of the Secretary. In the case of leases the deductions allowed by this paragraph shall be equitably apportioned between the lessor and lessee."

The portion in bold face type is new matter and is evidently designed to make each lease an independent, economic unit so that when the income therefrom fails to cover the depletion allowance arrived at by the valuation, no loss from the operation of the lease attributable to the depletion deduction can be carried over and deducted from the income from other leases. The administration of this clause will involve some difficulty because it will not be an easy matter to determine exactly how much of a taxpayer's net income is attributable to a particular lease but will require the allocation of certain overhead and general expense to particular leases.

In section 213 of the proposed law wherein gross income is defined the following new provision is found which may be of interest to taxpayers residing in states where community property is recognized:

"Income received by any marital community shall be included in the gross income of the spouse having the management and control of such community property, and shall be taxed as the income of such spouse."

## New Gas Rate Schedules Filed with the Public Utilities Commission of Ohio

From September 25, 1921, to October 25, 1921

### THE AUSTINBURG FUEL AND LIGHT COMPANY

**Austinburg**—Schedule effective October 1, 1921. No ordinance.  
75c per 1000 cu. ft.  
Discount—10c per M.  
Min. charge—60c a month.  
(Old Rate)—50c per 1000 cu. ft.  
Delayed payment penalty—5c per M.  
No min. charge.

### THE JANTHA LIGHT AND FUEL COMPANY

**Osborn**—Schedule effective October 12, 1921.

Ordinance passed September 14, 1921, to remain in force and effect until conditions warrant a change in rate.

First 5,000 cu. ft. 60c per M.

Next 5,000 cu. ft. 65c per M.

Next 5,000 cu. ft. 70c per M.

Next 5,000 cu. ft. 75c per M.

Next 5,000 cu. ft. 80c per M.

Next 5,000 cu. ft. 85c per M.

All over 30,000 cu. ft. 90c per M.

Discount 5c per M. cu. ft.

Minimum charge—70c a month, subject to discount of 10c.

(Old Rates)—First 5,000 cu. ft. 45c per M.

All over 5,000 cu. ft. 40c per M.

Discount—5c per M.

Minimum charge—40c a month.

### THE NOBLE FUEL SUPPLY COMPANY

**Summerfield**—Schedule effective October 15, 1921.

No ordinance.

50c per M. cu. ft. Discount 5c per M.

Minimum charge—90c a month.

(Old Rate)—33c per M. cu. ft.

Discount—5c per M.

Min. charge—None.

**Whigville**—Schedule effective October 15, 1921.

No ordinance.

Both new and old rates same as for Summerfield.

### THE RIVER GAS COMPANY

**Marietta, Belpre, Newport, Ohio, and neighboring districts**—Schedule effective October 1, 1921.  
No ordinance.

#### Domestic:

First 5,000 cu. ft. 37c per M.

Next 5,000 cu. ft. 39½c per M.

All over 10,000 cu. ft. 42c per M.

Discount—2c per M. cu. ft.

#### Gas Engines:

36c per 1,000 cu. ft.

Discount—1c per M.

#### Industrial:

35c per 1,000 cu. ft.

Discount—1c per M.

Minimum charge applying to all above classifications—70c a month.  
(Old Rates)—

#### Domestic:

First 5,000 cu. ft. 32c per M.

Next 5,000 cu. ft. 34½c per M.

All over 10,000 cu. ft. 37c per M.

Discount—2c per M.

No minimum charge.

#### Gas Engines:

First 500,000 cu. ft. 31c per M.

All over 500,000 cu. ft. 26c per M.

Discount—1c per M.

No minimum charge.

#### Industrial:

(Same as for Gas Engines)

**Chesterhill, Pennsville and neighboring districts**—Schedule effective October 1, 1921.

No ordinances.

First 5,000 cu. ft. 42c per M.

Next 5,000 cu. ft. 44c per M.

All over 10,000 cu. ft. 47c per M.

Discount—2c per M. cu. ft.

Minimum charge—70c a month.

(Old Rates)—32c per 1000 cu. ft.

Discount—2c per M.

Minimum charge—None.

### SPRINGFIELD GAS COMPANY

**Springfield, Ohio**—Schedule effective November 24, 1921. Expires October, 1924.

50c per M. cu. ft.

5% penalty charge.

(Old Rates)—35c per M. cu. ft.

5% penalty charge.

### THE UNION GAS AND ELECTRIC COMPANY

**Reading**—Schedule effective September 22, 1921.

Filed in accordance with order of Commission dated September 22, 1921, in proceeding No. 1003, in re-complaint of The Union Gas and Electric Company as to ordinance No. 146-A, passed by the Council of the Village of Reading, Hamilton County, Ohio, November 20, 1916.

40c per 1,000 cu. ft.

Discount—5c per M.

Minimum charge—40c a month, subject to discount of 5c.

(Old Rates)—40c per 1,000 cu. ft.

Discount—5c per M.

No minimum charge.



## Notes of the Industry

### Decrease in Production

The three natural gas companies of West Virginia which furnish the distributing companies of Ohio with the majority of their supply, produced 21.4 per cent less gas during the year 1920 than they did in 1917.

The companies are the Hope Natural Gas Co., Columbia Gas & Electric Co. and United Fuel Gas Co.

Figures just compiled show that these three concerns produced 130,434,756,000 cubic feet of natural gas during the year 1917, while in 1920 the amount produced was only 102,401,292,000.

As the available supply of natural gas is diminishing each year, it is pointed out that the amount produced by these companies, which supply virtually all of Ohio, will decrease each year.

### Manual for the Oil and Gas Industry

The Manual for the Oil and Gas Industry, originally published in 1919 by the Industrial Revenue Bureau of the Treasury Department, has been brought up to date and copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 25 cents. Since the publication of the original Manual, a number of Treasury Rulings have been rendered. Much additional information regarding the estimation of oil reserves and a large amount of data relating to the dry hole hazard for various districts and fields are included in the volume. The revised Manual has been issued to assist the taxpayer of the oil and gas industry to prepare his Federal tax returns correctly and expeditiously.

### Citizens to Chip in for Gas Service

West Toledo, Ohio, residents, who have long felt the want of gas, will be presented with a plan which will make the fuel available for use by next summer.

A flying squadron of citizens, working under the West Toledo Commerce Club, started out to visit every home and lot owner in that section of the city with the idea of getting enough subscriptions to guarantee a start on the main feed line this fall.

The subscriber makes an initial deposit of \$10. This amount goes toward construction of the main feed line. The subscriber then has until April 1, 1922, to pay the other \$25, either in a lump or by \$5 monthly installments.

Should some home owners hold out, this will not prevent the construction of the branch line on a certain street, unless there is not enough money coming from the willing property owners to finance the construction. But if the line is laid the delinquent home or lot owner cannot have service until he pays the \$35.

If by next spring it is found there is not enough money available to finance the construction on a particular street then \$25 of the amount paid in by each subscriber on that street will be refunded.

The \$35 that is paid in by the subscriber will be returned to him the first year of service through a refund on his gas bill. In this way the Rail-Light buys back the lines the consumer has originally paid for.

It is figured that about \$20,000 will be necessary at the start to assure construction of the main feed line this fall. That means that 2000

lot owners must subscribe \$10 each. As the installments come in during the winter enough money will be available for additional construction on the side streets in the spring. The complete cost will be \$64,000.

### Unusual Type of Natural Gas Gasoline in Louisiana

C. E. Coates and B. Y. Tims of the Louisiana State University report a peculiar type of natural gas gasoline. They say, "The Terrebonne gas field, about twenty miles below Houma, gives gas and a pressure of about 1,200 pounds per square inch. This gas is piped to Houma and supplies the town and vicinity with fuel. The pipes are provided with drips which fill up rather frequently and are pumped out. As the condensate did not seem to be like ordinary gasoline either in odor or boiling point a sample was investigated with the following results. Boiling began at 195°C. The fractions first obtained were refractionated and eventually obtained with fairly constant boiling points. The lowest fraction had a formula  $C_{12}H_{22}$ . The higher fraction seemed to belong to the same series. The condensate contained no member of the paraffine series at all, but probably is made up of Dicyclopentyl and its homologues

### Pure Oil Purchases Interests in Mexia

Houston, Texas.—Col. A. E. Humphreys announced at Mexia that the Pure Oil Company party headed by President B. G. Dawes, which visited the Mexia field last week, has concluded a deal with the Humphreys interests for a share in their Lime-stone County properties.

The Pure Oil Company is said to have purchased \$2,000,000 worth of stock in the Humphreys Mexia Company and the Humphreys Texas Company for a price reported at \$7,000,000, the fund going into the

treasury for further development. Since the sale of the stock announced the night of October 24, the outstanding stock has a par value of \$8,500,000.

Pure Oil Company's entry into the Mexia territory in conjunction with the Humphreys interests makes strongly probable the construction of pipe line facilities, probably to the Gulf, a distance of about 170 miles. The project had been discussed before but was not definitely acted upon by the Humphreys interests.

### Hudson Bay Co. to Seek Oil

The Hudson Bay Co., which for three hundred years or more has been an enormous factor in the fur trade of the world, is expected soon to develop vast potential oil fields which it is believed to own in northern Canada. This company controls upward of 4,000,000 acres in the Far North.

Cable dispatches from London tell of the renewal of contracts with the Imperial Oil Co., Ltd., of Canada, a subsidiary of the Standard Oil Co. It is understood, also, that it is entering contracts with other large oil organizations, among them possibly being the Royal Dutch Shell group.

The Hudson Bay Co. is understood to own a large part of that district which has come under the surveys of petroleum geologists in the last year or two. It is said that favorable reports have been made on Hudson Bay Co. lands. This property lies partly in the Fort Norman district.

### More Railroads Turning to Oil as Fuel

Wichita, Kas.—Because of the advantages of fuel oil over coal, the Missouri Pacific railroad is equipping all of its locomotives with fuel oil burners. The Orient railway also is considering the same step. The action of the Missouri Pacific

follows that of the Missouri, Kansas and Texas road which has rather pioneered in the matter of using fuel oil. The M. K. and T. recently placed a large order with refiners. The Missouri Pacific action is made in the face of the fact that coal is easily accessible to its lines. There are no coal deposits along the line of the Orient.

The Pure Oil Company has acquired complete control of the Eureka Fire and Marine Insurance Co., Cincinnati, and the Security Insurance Co., it is reported, in order that its insurance business amounting to between \$30,000,000 and \$40,000,000 worth of risks a year, might be taken care of by its own controlled company.

#### **To Increase Price of Natural Gas**

Declaring that depleted gas supplies warrant a price advance, Philadelphia Company subsidiaries will on November 1 advance natural gas from 45 to 50 cents net per thousand cubic feet. A year ago gas was raised five cents without protest but the city of Pittsburgh will oppose the new rate.

#### **Big Chicago Gas Plant Ready**

The new \$18,000,000 gas and coke plant built for the Peoples Gas Light & Coke Co., on the Chicago drainage canal, has been, during the past year, the second largest building project in the middle west. It has been exceeded in importance only by the new Chicago union depot enterprise. The plant and its adjuncts covers about 250 acres of ground and has nearly twelve miles of railroad track.

The coal gas plant will carbonize about 2000 tons of coal a day, producing 12,500,000 cubic feet of coal gas and 1200 tons of coke. The water gas plant will produce about 20,000,000 cubic feet of gas per day. Storage facilities will take care of 240,000 tons of coking coal, or 120

days' supply, and 30,000 to 35,000 tons of coke from the coal gas plant, or about thirty days' production.

#### **Tunnel Under Two Canals**

The Peoples Gas Light & Coke Co. will take all of the gas and all of the coke produced by this plant. This insures the Peoples Company adequate gas production capacity for some years to come—something it has lacked.

One of the interesting engineering incidents in connection with the building of this plant was the construction of a tunnel under the sanitary district and the I. & M. canals to carry the thirty-six-inch mains, connecting the new plant with the distribution system of the Peoples Company. This tunnel is nine feet in diameter and eighty-eight feet below the surface of the ground and 1700 feet long.

#### **Use of Natural Gas and Coal Falls Off**

Oklahoma City—Indisputable evidence that cheap fuel oil has made great inroads into the coal and natural gas industries of Oklahoma, by reducing the sales of these products for use in the manufacture of electricity, is found in the report of the United States Geological survey of September 20, 1921.

In March, 1921, the amount of fuels used for the production of electricity in Oklahoma for that month was: Coal 5,172 tons, fuel oil 39,943 barrels and natural gas 443,816,000 cubic feet. The amount of fuels used in production of electricity in Oklahoma during the month of July, 1921, was: Coal 2,904 tons, natural gas 294,927,000 cubic feet, fuel oil 70,283 barrels.

The foregoing figures show that during the five months, from March to July inclusive, the amount of coal consumed in the manufacture of electricity in Oklahoma fell off 2,268 tons and that the amount of natural gas utilized for the same purpose decreased 148,889,000 cubic feet,

while the consumption of fuel oil for the manufacture of electricity showed an increase of 30,345 barrels. The total amount of electricity produced in Oklahoma from fuels of all kinds in March, 1921, was 18,688,000 kilowatt hours, compared with 17,211,000 kilowatt hours for July.

A number of natural gas companies of Oklahoma have filed application with the corporation commission asking for increased rates, based upon statements that so many of their customers for increased rates based upon statements that so many of their customers had transferred to the use of fuel coal, owing to the low price of this product, that their sales of industrial gas had either been wiped out or greatly reduced. This produced a great falling off of revenues and placed almost the entire burden of maintaining the property and the service, upon the revenue from gas sold for domestic purposes. The figures from the U. S. Geological Survey bear out these claims as to the tendency to abandon the use of natural gas and substitute fuel oil.

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#### Public Utilities Pay Millions in Taxes

Public Service Corporations of Oklahoma will pay taxes on a valuation of approximately \$308,000,000 for 1921, according to estimates of the state board of equalization. Complete figures for the 1921 assessments are not yet completed but it is estimated that the total valuation of public service corporations has been increased at least \$10,000,000 over last year. This is represented largely by improvements made by these public utilities, which have not only added millions to the taxable wealth of the state, but have brought about a great improvement in service to the public within the last year. Total valuation of public service property in Oklahoma county in 1920 was placed by the state

board of equalization at \$14,972,074 and for 1921 at \$15,951,501. Proportionate increases were recorded in valuation of the public service property in several other counties for 1921 as compared with the previous year.

Figuring on the basis of the work of the state board of equalization it is estimated that Oklahoma's utility companies will pay \$9,000,000 in ad valorem taxes to the state, county and municipal governments to say nothing of what they will pay in gross production and federal income taxes. A substantial portion of the income of public utilities of Oklahoma is paid out to the federal, state and municipal governments. High taxes are necessarily reflected in higher rates as the rates they charge are the only sources of revenues of the public utilities.

After paying taxes and other fixed charges some of the utilities have had nothing left for interest on their investment and to take care of depreciation according to testimony that has been submitted to the corporation commission.

In Oklahoma, as in Ohio, public utilities privately owned, operate under strict regulation by the state authorities as to all their rates and practices and pay taxes to the federal, state and municipal governments. Municipally owned public utilities are not regulated by the state as to their rates and practices and pay no taxes, either federal, state or municipal.

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Oklahoma led all states in production of oil in August with a total output of 10,217,000 barrels or an average of 329,581 barrels a day. California stood second with 10,026,000 barrels, or an average of 323,419 barrels a day. Oklahoma and California combined produced within a few barrels of half of the entire output of the United States.

**Columbia Gas and Electric**

Columbia Gas & Electric Co. for twelve months ended Aug. 31, 1921, reports gross earnings of \$14,829,895, an increase of \$912,497 over the previous twelve months. Net after taxes was \$7,132,691, an increase of \$254,712, and surplus after fixed charges \$4,553,421, an increase of \$139,863.

**East Cleveland Follows Lakewood Example**

East Cleveland city commissioners adopted the 50-75 cent, sliding scale gas rate franchise offered by the East Ohio Gas Co. Formerly East Cleveland stood with Cleveland to fight through the courts for the 35-cent rate. The new grant is similar to that in Lakewood.

**GAS MAKING vs. GAS STORAGE CAPACITY**

(Continued from Page 14)

**Continuous and Intermittent Generation**

If there is anyone present who does not think there is a great deal of difference between continuous and intermittent generation let him make careful note of the efficiency of his plant next winter from day to day, when he has the opportunity.

Suppose it costs you as small an amount as 1/10 of a gallon per 1000 to operate with frequent shut downs; the average daily output is 10,000,000 cu. ft.; oil is worth \$1.75 a barrel. This little 1/10 of a gallon per 1000 represents an annual loss of over \$15,000, or 7½ per cent on \$200,000. Considerable addition could be made to the storage of a plant this size for half that amount.

**Generators Come First**

When the growth of the business warrants an increase in the size of the plant, it would be best to add to both generating equipment and storage holders so as to maintain the same proportions as outlined above. If money and material are expensive and hard to get, then for economic reasons it would not appear to be good business to make any but the most necessary expenditures. Such being the case, build generators first, and when conditions warrant, increase storage capacity.

Why generators first? Because they are the very life of the plant; the gas cannot be sold until it is made. No matter how much the storage tanks hold, if the generating units are crippled and overloaded to a point where each day shows the holders a little lower, then it is only a question of time until the town goes out of gas. On the other hand, should anything go wrong with the holders there is always the by-pass, which can be opened, and with ample generating capacity the town can be supplied with gas indefinitely. Perhaps the service will not be 100 per cent, but it will be a great deal better than no service at all.

That is why generators should be the first consideration in plant extension. But if both generation and storage are needed to anticipate the increase in business, then it is up to the engineering department, through the executive officers, to convince the finance committee that the expenditures must be made even if the money market is out of balance. It is all right to take a chance sometimes, but not with the reliability of the gas service to the consumer. It means too much to him and to the utility itself.

**Conclusion**

In conclusion, storage capacity should be 65 to 70 per cent of the peak day's output. This amount gives an ample factor of safety at all times and also gives sufficient leeway so that generating may be carried on most efficiently.

# PITTSBURGH METER COMPANY

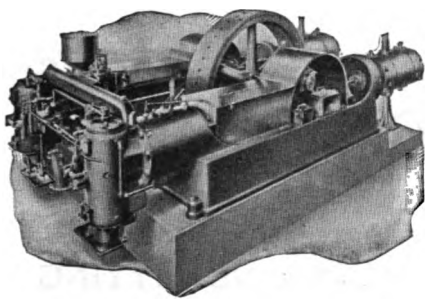
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*Illustration shows 150 B. H. P. Twin Type Single-Acting, Four-Cycle, Gas Engine Compressor Unit*

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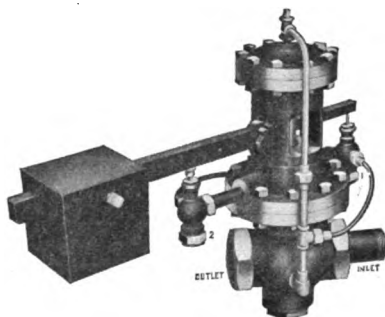
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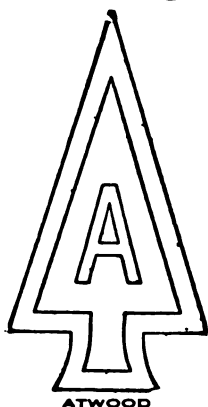
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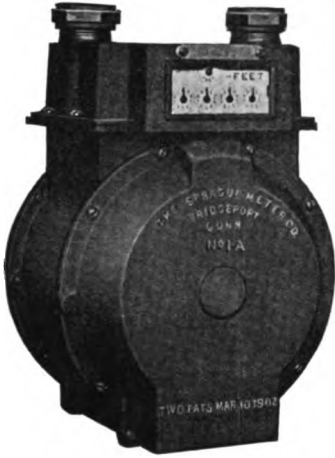
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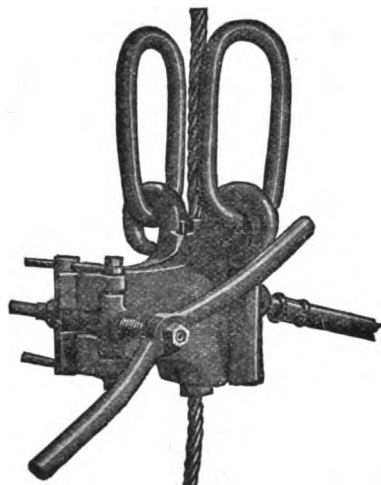
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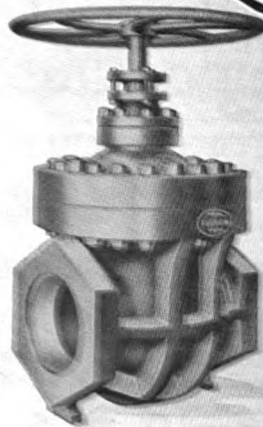
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## Oil--The Law of Supply and Demand

Summary of An Address by

R. L. WELCH, General Secretary, American Petroleum Institute

Before Second Annual Meeting, American Petroleum Institute, Chicago, Dec. 7, 1921.

"The violent changes in oil prices in my judgment are due not to manipulation, but to the lack of it; due not to combination, but the lack of it; due not to the control of production and consumption, but to the lack of it—due to the normal operations of the law of supply and demand—a law which is not an ideal thing from every aspect, any more than is the competitive system an ideal thing from every aspect," said R. L. Welch, general secretary and counsel of the American Petroleum Institute, in an address on "Oil—The Law of Supply and Demand," before the second annual meeting of the Institute, Congress Hotel, Chicago, December 7. Regarding the future, Mr. Welch said:

"Somebody may ask as to the future. It seems to me that there is only one thing as to the future which can remain in the realm of certainty, and that is that the current excess or the current deficiency of oil will be the important factor in determining the level of prices. Whether we assemble the facts as to production, as to consumption, as to supply or as to demand, however important they may be isolated and unrelated, the one thing, and in fact the crucial thing, which must be deduced from them is their relationship, that is the simple question whether an oversupply or an undersupply exists for a sufficiently long period of time to make itself felt throughout the entire industry."

### Contemporaneous Movements of Stocks and Prices

Referring to the fact that drastic price changes of recent years have caused many persons to ask whether the violent fluctuations in price were produced by the normal operations of the law of supply and demand, or by the will, the design or the combination of interested and powerful companies and individuals, Mr. Welch presented government statistics showing that in the few months during which prices change so greatly, there coincided in point of time with the highest prices a large draft on stocks; with the lowest prices, a great accumulation of stocks; and with the price change upward, a draft on stocks.

"If these contemporaneous movements of stocks and prices together



do not disclose the normal and natural operations of the law of supply and demand, what could disclose them?" he said. "It would seem as though the mere statement of these profound and rapid changes in the relationship of the supply and the demand would be a sufficient answer to those persons who calmly and in good faith would apply the same principles of economics to the oil business that they would apply to the fluctuations in the market for wheat, cotton, corn, oats, cattle or any other of the world's great commodities."

### **Facts as to Competition**

The facts as to competition in the oil business are well known, he said. The competition has been so keen to get the oil out of the ground that the one serious question is not whether there is competition, but rather whether there is too much. The number and capacity of the refineries has shown a rapid increase, and the development of every oil field has meant new refineries and new competitors.

"On every hand are competitors ready and willing to buy, sell and develop oil properties and crude oil; to transport, refine and market crude oil and refined products. What company is there in the oil business which would have even momentary security in its business if it were not ever watchful and ever active? And, finally, into what business in America have more new men, more new capital, come than into the oil industry? The integration and combination of this vast force of competitors would constitute a gigantic task such as has never been attempted by the most daring and farseeing of financiers."

"Even if all of these thousands of individuals and companies were integrated, who is there in the world with sufficient insight to gauge the other factor necessary to know in order that an equilibrium could be maintained, viz., the consumption demands of the country, for is it not obvious that he who would attempt to control production must attempt to control it in relation to consumption? Who is there with the vision to have predicted that domestic consumption, including exports, would jump from an annual rate in January, 1919, of 324,000,000 barrels to 575,000,000 barrels in August and September, 1920; that it would drop in February, 1921, to 421,000,000 barrels; and that, having dropped to such a basis, it should in September, 1921, reach 605,000,000 barrels, a mark unprecedented in the history of the petroleum industry?"

### **Effect of Excess of Production Over Public Absorption**

After outlining the normal operations of the law of supply and demand in relation to the advance in petroleum prices in 1920 and early in 1921 to a high point of \$3.50 a barrel for Mid-Continent crude and calling attention to the fact that that advance was investigated and that no charge that it was not justified was ever seriously urged, much less established, he took up the question of the subsequent decline which sent the price to \$1 a barrel in June, 1921.

"Where more of a commodity is being produced than the public will absorb at current prices, someone must furnish the capital which will be required if the market is to be sustained. Conceding then for the sake of argument that from what might be called an engineering aspect the world's demand for oil was so great that production ought to have been kept at its peak, what sort of a financial or fiscal operation would have been necessary to have kept prices on their highest level?"

### Financial Task of Handling Excess Production

"In the first place, somebody would have had of necessity to supply enough money to purchase 75,000,000 barrels of oil at, say \$3 a barrel, or a total sum of \$225,000,000, not counting anything for pipeline, gathering, storage and other charges, which would easily bring the total up to \$325,000,000."

In addition, he pointed out, there would be involved obviously speculative risk, business discretion, regard for the law and for the public. Had prices of Mid-Continent crude been maintained at \$3.50, the surplus would have been far greater, he stated, estimating that not less than 75,000,000 barrels more would have been added before even a theoretically possible equilibrium between the supply and demand could have been attained—and thus a minimum of \$325,000,000 of additional capital required.

"Having raised, we will say, \$650,000,000 in cash to help us establish a theoretical corner in oil and to sustain prices on the highest level, let us now turn our attention to certain other parts of the job.

"The assumption that taking up the surplus oil at, say, the tidy sum of \$650,000,000, which nobody had and which nobody could get, would stabilize the market, is based on the further assumption that the industry could continue to obtain from the public the prices for products which it was receiving prior to the accumulation of the surplus."

### Decline in Refined Product Prices

Mr. Welch pointed out that the basic crudes did not decline during the latter months of 1920, but that they did decline precipitously in January and February, 1921. It therefore was important to inquire whether during the latter months of 1920 there were any declines in the market prices of refined products which eventually would force down the price of crude, he said. He presented revenue estimates based on 1920 operations of the oil industry, as to quantity of crude and as to production of refined products. These showed that the price declines in fuel oil between September, 1920, and December, 1920, totaled \$245,000,000 on an annual basis. Contemporaneously lubricating oil began to slip in price and during the period of October, November and December the decline in value on an annual basis approximated \$100,000,000. Gasoline and kerosene also commenced to weaken and by the first of January the oil industry was carrying a loss of revenue on these products on annual basis approximating not less than \$345,000,000. Up to this time there had been no decline in crude price. In January and February the decline in all of the products was so profound that they approximated on an annual basis not less than \$250,000,000 in January and \$570,000,000 in February.

In referring to what he termed a veritable debacle in fuel oil values and to the fact that coal is obviously the greatest competitor of fuel oil, Mr. Welch pointed out that fuel oil, from the very necessities of the producing and refinery situation, continued to be produced and actually increased in quantity during the first quarter of 1921 over the corresponding quarter of 1920, while coal production could be and was diminished in accordance with the demand.

### Billion Dollar Shrinkage

"Under such circumstances what could have occurred but a frenzy of price-cutting?" he said. "Reverting to the oil situation, it is thus seen that in the fall of 1920 and the early winter of 1921 the revenue of the oil industry from the public on an annual basis had shrunk more than

\$1,000,000,000. One grasps the significance of this figure when he realizes that the total value of the 1920 production on the basis of the highest crude prices was approximately \$1,400,000,000. This shrinkage in revenue, in my judgment, was caused primarily by the commercial depression through which we were then passing. It was this pressure which caused the precipitous decline in the crude markets of the United States. The decline in revenue caused by competitive price-cutting continued throughout the entire summer of 1921, and the loss of revenue from the public at all times was well in advance of the decline in the price of crude oil.

"The most cursory examination of the losses of revenue caused by competitive price-cutting will show that it was the constantly diminishing volume of revenue which literally pressed down the value of Mid-Continent crude to \$1 per barrel.

"It is therefore evident that to have sustained prices against this ebb tide during this period of crises would have required fiscal and financial operations impossible of attainment by any industry."

#### Regarding Recent Advances

Coming to the period of the recent advance in crude oil prices, he said the question has been raised in many quarters as to why the advance took place and as to whether the fundamental conditions in existence justified it. He pointed out that during the months of July, August and September there was a practical equilibrium in the supply and demand for oil, according to government figures, and, in fact, during those months that a draft on stocks occurred. In the same period the domestic production in the United States did not equal the domestic consumption, whereas in February, 1921, on an annual basis we were producing in the United States 150,000,000 barrels per annum more than we were consuming in this country. August, 1921, was the greatest month for consumption in oil industry. He then examined the fundamental facts as to whether prices of refined products justified the increases in the price of the raw material.

The aggregate increases in crude oil prices during September, October and November on an annual basis approximated \$330,000,000, he said. Taking the country as a whole, the fuel oil prices reached their lowest ebb in June, 1921. In October the increase became profound, approximating \$100,000,000 on an annual basis. Lubricating oil prices reached their lowest level in August, 1921. In October and November the increase on an annual basis approximated \$50,000,000. Gasoline and kerosene continuously declined in price from October, 1920, to October, 1921, the increase in price of these commodities aggregating \$200,000,000 on an annual basis. The total increase for all products was therefore, roughly, \$350,000,000 to \$400,000,000 per annum.

"Thus it is quite apparent that the markets for finished products, which lagged behind the declines in crude, have now been leading the advances in crude," he said. "In the former instance the money from the public diminished and forced prices down, and in the latter the flow of money from the public increased and forced prices up. Broadly speaking, taking the nation as a whole, and considering the period commencing July 1 to date, the oil industry has been going through a period in which there has been a market to the public for every barrel of oil produced. What could be more normal or more natural than that prices should rise from a level which was obviously below the cost of production?"

## European Conditions and Outlook

Summary of An Address by

EDWARD PRIZER, President, Vacuum Oil Co.

Before Second Annual Meeting, American Petroleum Institute, Congress Hotel, Chicago, Dec. 6, 1921.

Declaring that the period of prostration through which the petroleum industry, as well as other lines, has been passing is due to the foreign situation, Edward Prizer, president of the Vacuum Oil Co., which has ramifications in many foreign countries, in an address at the second annual meeting of the American Petroleum Institute at the Congress Hotel, Chicago, said Europe is suffering from unsound economics, bad finance and sordid politics. He analyzed conditions as he found them during an extended trip, painting a picture of economic breakdown, political inepetitude and social unrest, and urged as essential that Americans should know the facts and weigh them with all soberness as relates to their own affairs.

"We may erect barriers to keep out the physical diseases of foreign countries, but no wall can shut out the commercial, financial and industrial ills of other lands," he said.

Our weakness is that our home development has been so great that we have failed to acquire an international vision, Mr. Prizer stated, adding that it was because of this that we were finally drawn into the world war.

### Our Entangling Alliance of Commerce and Finance

"We hear much today about entangling alliances," he continued. "The phrase has become a fetish, wholly divested of the original meaning. It is used either as sheer political buncombe or to befog sound economic and political thinking. We are in an entangling alliance with the whole world which never can be disentangled. It is the entangling alliance of commerce and finance. The web of this entangling alliance is woven throughout our entire body politic, and it will require the ablest statesmanship and soundest financiering to prevent it from strangling us."

"In these dangerous times, when the highest constructive statesmanship is imperative, it is pitiful to see our lawmakers at Washington wasting precious hours in petty and sordid politics. Never has our country so sorely needed as now political leaders of both international and economic vision. The conception at Washington seems to be based on the impossible postulates that foreign commerce consists of selling only without equivalent buying and that draining capital and ham-stringing industry by destructive taxes are proper methods of inducing a business revival. The vindictive attitude of congress toward wealth is both unreasoning and unintelligent."

"Europe has broken down. The balance not only of financial but of moral power has been shifted from the old world to the new. This involves upon us not only large opportunities, but great responsibilities. I have a deep conviction that to a greater extent than any of us realize the future of the world rests upon us."

### Map of Central Europe a Monstrosity

Mr. Prizer described the new map of Central Europe as a projection of geographical monstrosities. The Peace Commission, in its endeavor to divide up Central Europe along ethnological lines, has seemed to pay little attention to natural frontiers or age-long economic currents, he said, adding that because of the centuries of race migration and race develop-

ment, any attempt at clear-cut ethnological divisions of peoples is an impossibility.

Czecho-Slovakia, with a population of thirteen and a half million, contains only six million Czechs, and they are determined that no other tongue but theirs shall survive, an effort as hopeless as that which Russia undertook for many years in Poland, he said. Poland contains a total population of thirty millions, of which only slightly more than one-half are Poles, and educated Poles, regarding themselves as a distinctive ruling class, look upon industry, commerce and productive enterprises as methods of activity unbecoming for them to follow. Jugoslavia has a population of a little short of twelve millions, of which not quite half are Serbs, and there is antagonism in spirit between the Serbs and the Croats. There are similar conditions, though to a lesser degree, in Hungary and Bulgaria.

"The strong predominant race in all these countries, freed from long oppression, has become aflame with a new race consciousness which is all consuming," continued the speaker. "The result is not only internal discord, but a positive external hostility. The ruling races of these new countries view the ruling races in the other countries not only with intense suspicion and jealousy, but with sentiments akin to hate. . . . There is an underlying conviction that there can be no permanence of national existence without some new federations or alliances, which are practically equivalent. As a consequence, political considerations overshadow every problem. One hears much of orientation from a political standpoint and very little about sound economics or finance.

#### **No Political Stability Until Russia Recreates Herself**

"Over all Central Europe hangs the somber shadow of Russia. It is not now primarily the fear of Bolshevism, for it has become evident that this evil disease carries its own poison which will cause its eventual death. No social system which throttles personal initiative or denies the rewards of individual effort can ultimately survive. It is a wholly different fear. . . . Some day Russia will recreate itself, and when it does there is every reason to believe that there will arise in Russia a greater sense of race consciousness than now troubles the new nations of Central Europe. When Russia sooner or later fully awakes and grasps the significance of her giant strength, what will be her attitude toward the carving up of her empire when she was prone and helpless? . . . It is evident that there can be no political stability in Central Europe until Russia recreates herself and the direction that her great strength will be exercised is definitely ascertained."

"Meanwhile these Central European countries are in a state of industrial, financial and political turmoil. There is everywhere an excess of politics and a lack of real statesmanship. Governments are weighted down with a tremendous load of civil and military employees. . . . Not only are these great armies drawn from production, but there are evident certain strong socialistic tendencies which militate against that earnestness of effort and labor which existed among the peoples as a whole prior to the war."

#### **Commerce Practically Dislocated**

Commerce in Central Europe as existing before the war is now practically dislocated, Mr. Prizer said. Tremendous efforts are being made to compel it to flow into new channels because of new national boundaries, but many of these efforts are as hopeless as trying to make water flow uphill. To fulfill the aspirations of nationalization new railway systems will have to be constructed, while old systems are in a very bad state of

repair. The exchange of commodities is hindered by innumerable obstacles encountered when crossing frontiers. As a result there is a plentitude of certain products in one locality and a deplorable lack in another only a short distance removed. The free passage of travelers is strangled by almost incredible difficulties.

Mr. Prizer declared that there have been created in Central Europe half a dozen Alsace-Lorraines, which will be festering sores for generations to come. Conditions in Northern Europe do not present a much more hopeful present outlook, he said. Every country is spending much more than its revenues, seeking to cover the deficiency by inflation of its currency, and the high cost of living has been intensified by the unprecedented drouth of last spring and summer. There is a nervous unrest, an unnatural gaiety, a seeking after pleasure. Amusement halls and cafes are crowded to capacity.

France is obsessed by an overwhelming fear, and is still further enormously reducing her recuperative capability by maintaining an army of nearly a million men. The Entente is dead save only in name. England, having secured all she can expect, longs only for a stabilized Europe in order that her industries may revive and her great army of unemployed may be put to work. She is passing through one of the most severe industrial depressions, but is seeking export trade with the dogged determination characteristic of the English nation, having a true conception of its vital relation to domestic prosperity. Her government is granting her exporters credits on foreign sales which are little short of actual subsidies and in various ways relieving her exporters of taxation on foreign trade. Her interests do not lie in a prostrate Germany.

#### **Tax Handicaps of U. S. Concerns Operating Abroad**

"In contradistinction with England's policy," Mr. Prizer said, "Congress cut out of our new tax law those provisions which gave relief to American capital engaged in export operations. This capital is enormously taxed in foreign countries, and when the residue of earnings comes back to this country it is again subject to the maximum tax at home. As a consequence, the net returns on American capital in apparently successful foreign operations frequently does not equal what might have been earned on money, without risk, from ordinary bank interest."

Mr. Prizer said Italy would be best served by rehabilitated Germany. She is suffering from prostrated industry, depreciated currency and socialistic tendencies. The neutral countries of Europe are suffering severely from the collapse of financial inflation, he said. In Germany there was an evident inclination to admit the loss of the war, but no evidences of repentance. There is as yet no evidence of permanent political stability, but there were signs of a willingness to work and a natural return of the population to its former industrial habits. The collapse of the mark has made living costs and conditions a cause for profound alarm, however.

Europe is everywhere universally poor and universally in need, Mr. Prizer found. He encountered a profound disappointment over the attitude of the United States, a complete mystification as to her intents and purposes and a settled conviction that Europe cannot be rehabilitated without the direct and active help of this country. There is a general misconception, he said, as to the burdens that have been put upon us by our participation in the war.

#### **Will Be Reawakening of Common People**

"There is no question but that Europe is suffering from unsound economics, bad finance and sordid politics. It is inconceivable to believe

that these conditions can be suffered to continue permanently. I do not believe that the whole populations of Europe permanently have gone mad. I believe in the end there will be a reawakening among the common people, and they will in time call their political leaders to account and will insist that peace and amity and the orderly regulation of human affairs are the proper and necessary methods of civilization and must exist and persist."

Mr. Prizer saw as hopeful signs the harvesting of crops in Central European countries sufficient for their own needs, with something to spare for export, and what he ascribed as a rift in the dark clouds overhanging Russia. In spite of the crushing load of debt, Europe possesses potential assets which if realized upon will prevent bankruptcy, he said. He believed England, France and the United States cannot permit Germany and certain of the Central European countries to go into insolvency that will bring financial chaos everywhere. A great source of present European expense is the burden of militarism, he said, and this will surely now be largely lifted with the Disarmament Conference turning the searchlight as never before upon the waste which militarism causes.

"It may be possible that this congress will not accomplish all that is either hoped for or desired," he said, "but, in any event, it will be the beginning of the end, for there will be set at work forces that in time will be irresistible, so that not only Europe but the people of the world everywhere can devote their resources and energies to the pursuits of peace; otherwise, warfare with all its attendant evils cannot fail to bring semi-barbarism to a considerable section of Europe."

### **Future of Oil Industry as Sure as Human Progress**

As to the petroleum industry, Mr. Prizer said that while he could see no reason to expect an early and material increase in European consumption, the essential part that oil is playing in human activities would necessarily indicate that Europe must have reasonable supplies of petroleum to exist, and hence that the purchase of other commodities will be restricted in order that petroleum may be obtained. It would not need a great stimulation of overseas industry to drain this country of its present accumulated petroleum reserves, he declared, and it is this conviction that is instigating a worldwide search for petroleum deposits. He believed the position of the United States government that American investors shall not be shut out from an equal opportunity with the citizens of other countries in the petroleum resources of the world will be maintained.

"The history of the petroleum industry clearly shows that consumption increases at a far more rapid ratio than the increase of industry as a whole," he said. "A moderate increase in human activities results in a much larger relative increase in the requirement for petroleum. The future of the industry, therefore, is as certain as human progress. There may be no immediate and pronounced increase of consumption, but as the world settles down to its regular methods of life after its wild war debauch, the call for petroleum and its derivatives will steadily increase. I believe it is great wisdom for the industry as a whole to look substantially into and plan for the future, for the time surely will come sooner or later when our production will be taxed again to its utmost and the backed-up supplies in Galicia, Roumania and Russia will be required to supplement the world's increased need, and that the production of Persia and elsewhere in Asia, though double that at present as expected, as well as new developments elsewhere, will constitute no menace to the producer and refiner in the United States."

## Refinery Statistics for September, 1921

Compiled by H. F. MASON, Petroleum Economist

The Bureau of Mines' report of refinery statistics for the month of September gives a total of 299 petroleum refineries in operation, with a daily capacity of 1,719,400 barrels of oil. The number of plants operating is the same as in August, but the daily capacity shows an increase of 12,600 barrels.

**GASOLINE:** The daily average production of gasoline for September was 13,897,100 gallons, which is a decrease of approximately 25,000 gallons per day from the production for August. Stocks of gasoline on hand at the refineries September 30, were more than 52,000,000 gallons less than the stocks for the end of August. Exports for September fell off nearly 13,000,000 from those of the preceeding month, shipments to the insular possessions more than doubled, while the domestic consumption dropped 65,000,000 gallons for the month.

Following is a table on the production and consumption of gasoline for the month of September:

Stocks first of month .....	567,645,548	gallons
Production .....	416,913,000	"
Imports .....	7,847,424	"
<b>TOTAL</b> .....	<b>992,405,972</b>	<b>"</b>
Exports .....	35,054,800	gallons
Shipments to insular possessions.....	3,941,540	"
Domestic Consumption .....	438,083,634	"
Stocks end of month .....	515,325,998	"
<b>TOTAL</b> .....	<b>992,405,972</b>	<b>"</b>

The production of gasoline for the first nine months of 1921, increased by 10% over the production for the same period in 1920; imports of gasoline were decreased 17%, exports decreased 15%, shipments to the insular possessions gained 33%, while the domestic consumption increased 6%.

**KEROSENE:** The production of kerosene for September shows an increase in the daily average production of 500,000 gallons over the daily average production for August. Stocks of this oil, at the end of September were 18,600,000 gallons less than the stocks at the end of August. Exports were approximately 500,000 less for September. The production of kerosene for the first nine months of 1921, as compared with the production for the same period for 1920, shows a loss of 16%, exports were 14% less, shipments to the insular possessions gained 21% and domestic consumption was 12% less than for the first nine months of 1920.

**GAS AND FUEL OILS:** For the month of September the daily average production of gas and fuel oils increased nearly 1,000,000 gallons over August. Stocks were decreased 14,000,000 gallons. For the first nine months of 1921, the production of gas and fuel oils were 13% larger than the production for the same period in 1920; exports, including bunker oil



loaded on vessels engaged in foreign trade were increased by 18% and shipments to insular possessions increased 19%, while domestic consumption shows a gain of 5%.

**LUBRICATING OILS:** The daily average production of lubricating oils for the month of September was 157,000 gallons larger than the production for the month of August. Stocks were decreased 12,300,000 gallons during the month. For the first nine months of 1921, the production of lubricating oils shows a decrease of 17%; exports a loss of 35%; shipments to insular possessions, a decrease of 1% and domestic consumption a decrease of 21%.

The following table shows the percentage increase or decrease for the first nine months of 1921 over the first nine months of 1920:

	Gasoline	Kerosene	Gas & Fuel Oil	Lubricating Oil
Production .....	+16%	-16%	+13%	-17%
Imports .....	-17%			
Exports .....	-15%	-14%	+15%	-35%
Shipments to insular pos. ....	+33%	+21%	+19%	-01%
Domestic consumption .....	+06%	-12%	+04%	-21%



**Aeroplane Photograph of Tide Water Oil Company's Refinery at Bayonne, N. J.**

The plant of the Tide Water Oil Company at Bayonne with one and one half miles of docking space and equipment including private docks for the largest sea going steamers covers 144 acres. Here are located over one hundred stills with a capacity of 25,000 barrels daily. Six hundred and seventy-five tanks, varying in size from 1 to 70,000 bbls. have a capacity of 2,750,000 barrels of crude and 150 by-products of this refinery.

## Brief on the Gas Oil Situation

The American Gas Association opposes the imposition of a duty on petroleum. This Association is acting on behalf of about 480 of the largest companies manufacturing gas in the United States. The basis for this opposition is the fact that petroleum, or its products, is used in the production of about 65 per cent of all the manufactured gas produced in the United States, and it is our earnest request that no action be taken favoring the imposition of a duty on petroleum that would tend to restrict the quantity of gas oil that will be available and necessary for the future production of the 160,000,000,000 cu. ft. of gas that must be manufactured yearly from this oil.

At this time the quantity of gas oil used in gas manufacture amounts to over 24,000,000 barrels yearly, while a conservative estimate of the growth of the gas industry indicates that the quantity required in five years will amount to at least 28,000,000 barrels yearly.

The quantity of gas oil required by the gas companies on the Atlantic Seaboard is about 60 per cent of the total of all gas companies' requirements, in the Mississippi Valley about 20 per cent, and on the Pacific Coast about 20 per cent. Therefore, it will readily be seen that a duty on oil aimed to protect production and supply in the Mid-continent field, will impose a severe burden upon users of 60 per cent of all the gas oil sold, that is, upon those gas companies located on the Atlantic Seaboard or closely adjacent thereto, where practically the entire amount of gas oil is delivered by water from fields other than the Mid-continent.

Any duty imposed upon crude oil will be reflected in the selling price of crude oil and its various products, so that a duty of 35 cents a barrel, or approximately 1 cent a gallon on crude oil, would tend to increase the price of gas oil about  $1\frac{1}{2}$  cent per gallon, which would result in an increase in the price of manufactured gas of about 5 cents per thousand cubic feet to some 43,000,000 people in the United States.

Authoritative statistics showing the quantity of oil refinery products, combine gas oil and fuel oil under one heading, so for this reason it is impossible accurately to determine the amount of gas oil produced since all fuel oil is not gas oil. Fuel oil includes heavy residuals remaining after the distillation of the crude oil; "cracked" oils from which the increased gasoline production is now being obtained, and heavy crude oils that are not fit for gasoline production or gas manufacturing purposes.

When the process of crude oil refining consisted of the simple distillation process, that portion of distillate obtained between kerosene and lubricating oil was sold as gas oil. However, with the introduction of the cracking process into the oil refining industry, the gas oil portion is still further reduced to gasoline and a heavy residue useless for gas-making purposes.

The subjection of gas oil or fuel oil to the cracking process is analagous in results to the subjection of gas oil to the gas making process in that heavy and ungasifiable residiums are left, gasoline being the desired product in the former instance, and gas the desired product in the latter instance.

Practically all gas oils that can be used for gas-making purposes can be cracked into gasoline, and as the demand for gasoline increases, a string-

ency in gas oil for gas-making purposes must be expected, since it is the same constituent which makes oil valuable for either gasoline or gas-making purposes.

In the gas industry, the only substitute for carburetted water gas is coal gas, produced in coke oven plants or retort plants. The least expensive type of coal gas plant requires an investment about twice that for a carburetted water gas plant of corresponding capacity, so that eventually to replace all water gas would necessitate an enormous duplicate investment and would require many years to complete. In addition, construction costs today are from fifty to one hundred per cent and the cost of capital at least fifty per cent above normal. Hence the interest or fixed charges on the investment would be double that of normal construction and would continue so even when operating charges return to more normal figures.

Coal gas plants, however, are being rapidly installed, but the increase in capacity hardly meets more than the increasing demand for gas; therefore, unless the gas manufactured in the present carburetted water gas plants contains considerably less oil per thousand cubic feet, no diminution in the total demand for gas oil can be expected.

There is another important fact which must be recognized when considering the installation of coal gas, namely, the growing scarcity of high-grade gas coals. The better grades of gas coals are being rapidly consumed by railroads and industries and by existing gas and coke oven plants; therefore, it will be only a comparatively short time when the poorer grades of gas coals must generally be used. With the use of these poorer grades, and under a continuation of the present high quality gas standards required by regulatory authorities, gas oil will have to be used if the gas manufactured is to meet these high standards, so that even a partial replacement of the present carburetted water gas plants by coal gas plants will not greatly relieve the oil situation unless the regulatory authorities reduce the present high standards of quality now demanded in many localities.

Still another important controlling factor which effects the installation of coal gas plants is the disposal of large quantities of excess coke produced, which must be marketed at reasonable rates to make these installations commercially possible.

It is evident from the foregoing reasons that the manufacture of carburetted water gas of necessity will be continued for a long time. Therefore, the gas industry must look for a continuance of a large supply of good gas-making oil, as nothing will take its place. To get this supply, every effort should be made to guarantee its production or importation, so that the chances of a repetition of the serious condition faced by the gas companies during 1920 can be reduced to a minimum.

During the Spring and Summer of 1920, before any sign of general business depression appeared, the gas companies were notified by the oil companies that a shortage of gas oil was expected and that no assurance could be given that gas oil could be supplied for any definite period in the future. In many cases the oil companies would make no contracts with gas companies that had been supplied by them for some time and in a few cases gas companies actually were unable to purchase gas oil from which they could manufacture gas of satisfactory quality. Subsequently, the oil companies notified the gas companies that the available gas oil was being utilized for the production of gasoline of which there was a shortage and that if this gas oil was to be delivered to the gas companies, it would have to be purchased at a price in competition with gasoline.

This latter condition was actually experienced by most gas companies in this country and the price of gas oil rose to unheard of figures, the average price on the Atlantic Seaboard running from 12c to 15c per gallon. This occurred when the production of oil in this country had reached new high levels and when the consumption of crude oil products was enormous, due to the great prosperity of most all branches of industry.

The recent break in oil prices, to figures that are even now 50 per cent to 100 per cent above prewar figures, is temporary and due solely to the business depression which has been accompanied by a decreased demand for gasoline resulting from the temporary cessation of the use of automobiles; the shutting down of industrial plants which had been using oil as fuel, the present idleness of the merchant marine and the lack of activity on the part of the Navy. With this diminution in the use of oil, the tank capacity of the oil companies became filled and with the continued high production and lack of storage, it was inevitable that prices should fall.

If there had not been a great increase in oil importations the last two years, and if the business depression had not appeared during the past year, the country would be experiencing today an oil famine which would seriously restrict the use of the automobile and render the use of oil in the manufactured gas business practically prohibitive.

All signs point to a general revival in business and when this takes place the same condition of oil shortage as has been experienced and briefly described again will occur, only it will be intensified. The general use of automobiles is increasing by leaps and bounds, and their use will be restricted only through the inability of oil companies to produce sufficient gasoline for their operation. The production of gasoline will thus be stimulated, and all other products of oil distillation will be sacrificed to the production of gasoline. Thus will the shortage of gas oil again become acute, and again will the gas industry be faced with an oil shortage.

It will be possible, however, to help this situation through importations of oil. Any restrictions placed upon oil imports render continued operation by a large percentage of manufactured gas companies throughout the country more difficult, especially those on the Atlantic Seaboard. This hinders the gas companies in the proper performance of their duty to the community and places an undue and unnecessary financial burden upon the gas consumers in the United States.

The following charts explain graphically the facts set forth in this brief. The material for these charts was secured from the following sources:—

The United States Geological Survey.  
The United States Bureau of Mines.  
The United States Bureau of the Census.

**Chart 1.**

This chart shows the division of gas oil requirements for 1920 by districts, in barrels and by percentage.

	Barrels	Per Cent
Atlantic Seaboard and adjacent states .....	14,400,000	59.8
Middle States .....	5,000,000	20.7
Mountain States .....	250,000	1.1
Pacific Coast .....	4,450,000	18.4
<b>Total .....</b>	<b>24,100,000</b>	<b>100.0</b>

## Chart 2.

**Average Price of Gas Oil vs. Average Price of Crude Oil**

This chart shows the ratio between the average price of gas oil to gas companies and the average price of Mid-continent crude, and indicates that any price additions to crude oil are reflected in an increase in price of gas oil.

Year	Average price for gas Oil Paid by Gas Cos.	Average Price Mid-Continent Crude
1910 .....	3.08c	.92c
1911 .....	2.96c	1.13c
1912 .....	3.40c	1.81c
1913 .....	4.35c	2.24c
1914 .....	4.35c	1.87c
1915 .....	3.57c	1.28c
1916 .....	4.14c	2.99c
1917 .....	5.76c	4.23c
1918 .....	7.90c	5.21c
1919 .....	7.05c	5.40c
1920 .....	12.62c	8.30c

## Chart 3

**Output of Refineries**

This chart shows the output of refineries in gasoline, kerosene, gas and fuel oil, and lubricating oil for the five years 1916 to 1920, inclusive, in both quantities and percentage. It will be seen that the percentage increase in the gasoline output for 1920 over 1916 has been 134 per cent.

**Millions of Barrels**

Year	Gasoline	Kerosene	Gas & Fuel Oils	Lubricants
1916 .....	49	35	111	15
1917 .....	67	41	155	18
1918 .....	85	43	174	20
1919 .....	95	45	181	21
1920 .....	116	55	211	25

**Per Cent Increase over 1916**

1916 .....	0	0	0	0
1917 .....	31	11	40	20
1918 .....	73	23	57	33
1919 .....	94	34	63	40
1920 .....	134	61	90	60

## Chart 4

**Production of Gasoline in the United States**

This chart shows how the extraction of gasoline has increased in order to meet the demands of approximately 8,000,000 motor vehicles in this country. It is to be noted that not only the total gasoline extraction has increased, but also the extraction per barrel of crude oil run to stills, the latter condition resulting in lowering the quantity and quality of gas oil available.

Year	Crude Run to Stills	Gasoline Extraction	Per Cent Extraction	Gallons of Gasoline Per Bbl. Crude Oil
Millions of Barrels				
1909 .....	120	12	10.7	4.5
1914 .....	191	35	18.3	7.7
1916 .....	247	49	19.8	8.3
1917 .....	315	68	21.6	9.1
1918 .....	326	85	25.5	11.0
1919 .....	361	94	26.0	11.2
1920 .....	434	116	26.8	11.3

Chart 5

**Crude Oil—Imports and Production**

This chart shows the ratio of quantity of domestic production of crude oil as compared with the quantity imported.

Millions of Barrels			
Year	Domestic Production	Imports	Total Available
1910 .....	209	1	210
1911 .....	220	2	222
1912 .....	222	7	229
1913 .....	248	18	266
1914 .....	265	17	282
1915 .....	281	19	300
1916 .....	300	21	321
1917 .....	335	30	365
1918 .....	355	38	393
1919 .....	377	53	430
1920 .....	443	160	603

Chart 6

**Crude Oil Consumption**

This chart shows the ratio of quantity of domestic production of crude oil compared with the consumption in this country. In this case, consumption includes domestic use and exports. The chart shows clearly that for the past five years there has not been sufficient oil for domestic consumption and export use and were it not for the great increase in importations, the exports would of necessity have been less, or else there would have been a reduction in domestic consumption.

Millions of Barrels							
Year	Domestic Production	Production Plus Import	Total Consumption	Year	Domestic Production	Production Plus Import	Total Consumption
1910.....	209	211	191	1916.....	300	321	318
1911.....	220	222	211	1917.....	335	366	377
1912.....	222	230	240	1918.....	355	392	413
1913.....	248	265	261	1919.....	377	430	418
1914.....	265	283	261	1920.....	443	603	531
1915.....	281	300	273				

Chart 7

**Deficiency in Production**

This chart shows the deficiency in the quantity of crude oil produced in the United States for years 1918 to 1921 inclusive, and indicates that,

under no circumstances, should there be obstructions or barriers placed on the importation of oil into this country.

### Millions of Barrels

Year	Domestic Consumption Plus Exports	Domestic Production	Deficiency Sup- plied by Imports
1918 .....	413	355	58
1919 .....	426	377	49
1920 .....	524	443	81
1921 .....	538	471	67

Figures for 1921 based on first five months.

### Chart 8

This chart shows the production of oil in the United States compared with the world's total production. It is seen that for the last ten years, the quantity produced in this country has increased, not only in volume, but in total percentage of the world's production. The greatest increase occurs in the last three years, when the increase in this country was from 66 per cent to 72 per cent of the total world production. If this increase is continued it will not be long before the intensified production in the United States will deplete the available supply, so that any restrictions on the importation of oil into this country will tend to deplete our oil reserves.

### Production of Crude Oil

Year	Millions of Barrels			Year	Millions of Barrels		
	World Prod.	U. S. Prod.	% of U. S. Prod. to World		World Prod.	U. S. Prod.	% of U. S. Prod. to World
1910.....	328	209	64.0	1916.....	461	300	65.2
1911.....	344	220	64.0	1917.....	506	335	66.2
1912.....	352	222	63.0	1918.....	514	356	69.1
1913.....	383	248	64.7	1919.....	544	377	69.0
1914.....	403	266	65.8	1920.....	615	443	72.1
1915.....	428	281	65.7				

### Chart 9

#### Average Daily Production of Crude Oil in the United States

This chart shows that the production of crude oil has continued to increase even in the face of present temporary decreased demands. This is largely due to concentration of drilling effort in those fields which were liable to produce the largest results. This production will not continue throughout the next year owing to the cessation of this flushed production and we may look for a reduction in the production for 1922, which will result in an increase in price and the necessity of importing oil to meet the requirements expected at that time.

Barrels			Barrels		
1920.	Jan. ....	1,190,000	1920.	Nov. ....	1,300,000
	Feb. ....	1,150,000		Dec. ....	1,260,000
	Mar. ....	1,180,000	1921.	Jan. ....	1,220,000
	Apr. ....	1,200,000		Feb. ....	1,260,000
	May ....	1,190,000		Mar. ....	1,310,000
	June ....	1,240,000		Apr. ....	1,330,000
	July ....	1,240,000		May ....	1,350,000
	Aug. ....	1,270,000		June ....	1,346,000
	Sept. ....	1,260,000		July ....	1,300,000
	Oct. ....	1,280,000		Aug. ....	1,321,000

## Gas Industry Loses One of Its Greatest Engineers

Martin A. Thiel, consulting engineer with The C. & G. Cooper Company and known to the gas industry as one of the pioneer gas engine designers and an authority on gas engineering, died at his home in Mt. Vernon, Ohio, on October 8th. He had been in failing health for over a year, but had continued to take an active interest in engineering and designing problems in connection with the gas engine work for the Cooper Company.

Mr. Thiel's was a life filled with valuable experiences. He was born in Milwaukee in 1859, but moved to Schleisingsville, Wis., in 1862, where he began his education in the public schools. At a very early age, he showed an interest in mechanics, and while still in the grades completed models of a steam engine, a threshing machine and a reaper. At seventeen, he returned to Milwaukee and began to serve his time as an apprentice in Hoffman and Billings Machine Shop. He continued there a year after completing his training and then went with the E. P. Allis Company as a machinist. By attending night schools and taking correspondence courses, he amplified his education and in a few years advanced to the position of shop superintendent. When the Allis-Chalmers Company was formed he became associated with that company. It was during this period that he



MARTIN THIEL

had his first experience in building and testing some of the very first large gas engines constructed in this country. He gave up this position with the Allis-Chalmers Company to become general superintendent of the Corliss Engine Company at Corliss, Wis. From there, he went with the Westinghouse Machine Company as Gas Engine Construction Engineer. Here again he had a rich experience in designing and building large gas engines.

When The C. & G. Cooper Company decided to develop gas engines especially designed for the natural gas trade, Mr. Thiel was selected as the most capable man to undertake this work. He became associated with The C. & G. Cooper Company early in 1908 as Head of the Gas Engine Department, and was serving as Consulting Engineer at the time of his death.

Mr. Thiel is survived by a widow and one son, Mr. B. C. Thiel, who has been associated with his father in gas engine work for a number of years. Mr. H. A. Gehres, Chief Engineer at the present time, who has acted as assistant to Mr. M. A. Thiel, and Mr. B. C. Thiel, both very able men in gas engine work and thoroughly acquainted with the requirements of the natural gas trade, will continue in charge of the Gas Engine Department of the Cooper Company as heretofore.



## Courts and Public Utilities Commissions

### Gas Rate Raise Approved—Council Unanimously Accepts Company's Proposal

Toledo's new natural gas rates to be charged by the Northwestern Ohio Natural Gas Co. will be reflected in the late January bills. The ordinance fixing the rate of the readiness to serve charge was approved by Council on November 28th, by unanimous vote.

"Maumee, Perrysburg, North Baltimore and Bowling Green will be given precisely the same schedules, which is 5 cents per thousand less for the first 5000 feet than they expected to pay," Manager James McMahon of the Northwestern Co. said on Monday evening.

These are the new rates which, it is estimated by the gas company officials, will be but about 1 cent a day more to the average consumer than the present rates.

#### Here Are New Rates

Readiness-to-serve charge, 75 cents a month.

First 5000 cubic feet per month, 35 cents a thousand.

Next 5000 cubic feet per month, 45 cents per thousand.

Third 5000 cubic feet per month, 55 cents per thousand.

All gas over 15,000 cubic feet per month, 65 cents per thousand.

This new rate for two years, unless Council repeals the ordinance before that time, will succeed the present rate on December 18. Here are the present rates:

#### Discount for Cash

Readiness-to-serve charge, 65 cents a month.

First 5000 feet per month, 35 cents per thousand.

Next 5000 feet per month, 40 cents per thousand.

Third 5000 feet per month, 45 cents per thousand.

Fourth 5000 cubic feet per month, 50 cents per thousand.

All over 20,000 cubic feet per month, 55 cents per thousand.

The rate in the new ordinance is really two cents per thousand feet higher than that given, in all instances, but a discount of two cents per thousand is to be given in the case of prompt payment of bills.

Mayor Schreiber, favoring the ordinance, which was passed as emergency legislation, signed the document immediately after its passage. It had 16 votes, representing the entire membership of Council.

### Commission Will Order Measurement of Gas

Oklahoma City—At a hearing before the corporation commission on October 18, all of the gas companies of the state expressed their entire willingness to co-operate with the commission in an order requiring the measurement of all gas entering into all gas pipe lines of the state, both at the well and the borders of cities, and also at the points of delivery to the consumers.

The commission had drawn a proposed order, covering the matter of measuring gas, and although compliance with this order will cost some of the companies many thousands of dollars, all of them expressed their willingness to have a permanent order of this kind put in force, in order

(Continued on Page 29)

## Who's Who in The Gas and Oil Industry

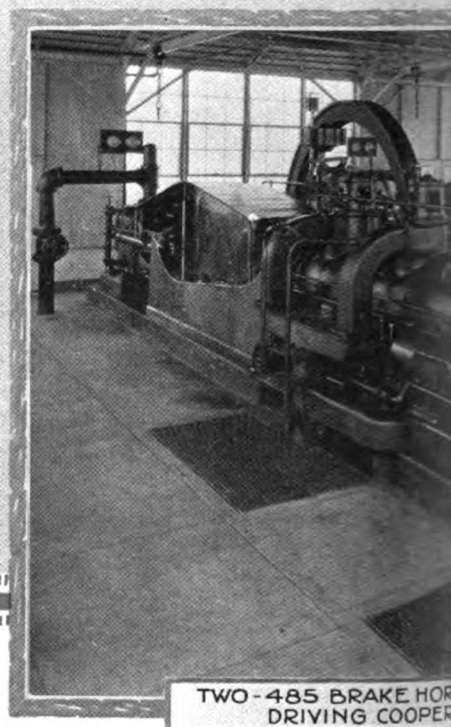


MR. T. C. JONES, President  
Delaware Gas Company  
Delaware, Ohio



RESIDENCE OF R. H. DAWSON, CHIEF-ENGINEER.

The  
**OHIO FUEL  
 SUPPLY CO.**  
 MILEY STATION  
 SHREVE, O.



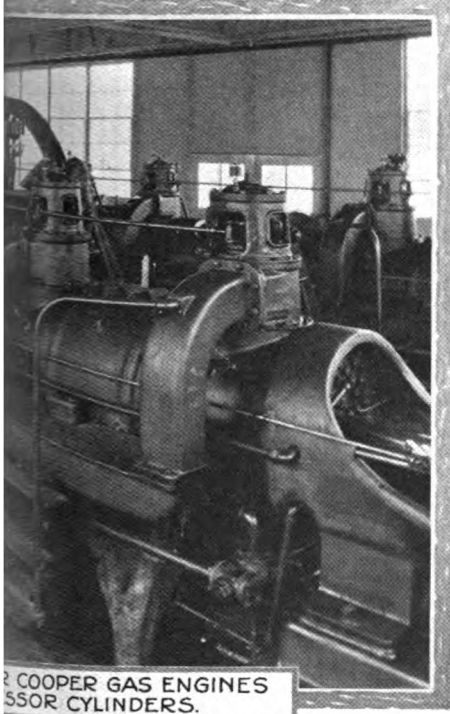
TWO-485 BRAKE HOR  
 DRIVING COOPER

### **MILEY COMPRESSOR STATION, (SI**

This is one of the many fine Compressor Stations built by The Ohio Fuel Supply Co. with a liberal supply of natural gas at all seasons. The equipment includes Compressor Cylinders.



EXTERIOR OF STATION SHOWING AUXILIARY BUILDINGS  
AND GAS COOLERS.



COOPER GAS ENGINES  
COMPRESSOR CYLINDERS.

The  
**C&G COOPER CO.**

928 Great Southern Life Bldg., Dallas, Texas. MT. VERNON, OHIO  
50 Church St., New York Oliver Bldg., Pittsburgh

Since 1833 Engineers and Builders

Ohio), **THE OHIO FUEL SUPPLY CO.**  
 ly Company, in their effort to supply their large distributing system  
 f two 485 B. H. P. Single Tandem Cooper Gas Engines direct driving  
**THE C. & G. COOPER COMPANY, Mt. Vernon, Ohio.**

## Who's Who in The Gas and Oil Business



**MR. ED. ROBINSON, Secretary**  
**West Virginia Oil and Gas Association**  
**Fairmont, W. Va.**

that the commission may be furnished the proper data to enable it to determine the amount of leakage, and to take steps to have this enormous waste of gas corrected.

The gas company representatives suggested a few modifications and amendments to the proposed order, and the commission accepted these, and will issue a permanent gas measurement order probably sometime during the present week. The order will, when made effective, require gas companies to place meters at all points on their lines necessary to secure correct measurements of all gas purchased and sold by them.

The companies, under the operation of this order, will then report these figures to the commission, and from these statistics, the commission can determine the exact amount of leakage in any gas pipe line.

The matter of gas leakage is the most serious menace facing the people and the gas companies, as it threatens to wipe out the supply in a few years unless corrected. Although it will cost the gas companies many thousands of dollars to correct this leakage, and although they may not be able to stop it entirely, they are anxious to do what they can to reduce this enormous waste of a leading natural resource of Oklahoma.

Testimony taken recently before the commission shows that gas leakage in the various pipe lines in Oklahoma, runs all the way from 15 to 75 per cent, and in some cases averages more than 50 per cent.

Tuesday morning, following a conference, the parties to Adv. Rate Pros. Nos. 61, 2 and 3, advised the Commission that an understanding had been reached, and thereupon the solicitors withdrew their protests against the new rates of The Wapakoneta Natural Gas Co. (75c per mo. ready to serve charge and \$1.00 per M. cu. ft.) The St. Marys Gas Co. (75c per mo. ready to serve ch. and \$1.05 per M. cu. ft.) and The Celina Co. (75c per mo. ready to serve charge and \$1.10 per M. cu. ft.), which had been filed to become effective October 1st, were suspended under the orders of the Commission and have been collected under bond.

It was intimated that the parties agreed that the companies should forthwith cancel the ready-to-serve charge and maintain the existing rates with a 50c per mo. minimum charge, and that, when the Commission shall have determined a rate for Lima, it shall be the basis, with 5 and 10c for transportation for these communities.

#### **Decision of the Ohio Supreme Court in the Lima Gas Light Case**

The Lima Gas Light Company filed with the Public Utilities Commission a schedule of rates for the use of artificial gas, which was to become effective October 15, 1920. Prior to that date the City of Lima filed its complaint with the commission alleging that the proposed rates would be unjust and unreasonable and would provide more than was sufficient to give a proper return on the investment of the utility. On hearing the commission found the rates reasonable and just and overruled the city's application for rehearing, whereupon the case was carried to the Supreme Court.

The city's chief cause for complaint is that the order of the commission, upholding the schedule of rates proposed to be charged for the use of artificial gas, is unjust and unreasonable and especially unauthorized in view of the state of the record. This complaint rests upon the basis that since no valuation has been proved, as required by law, the commission erred in upholding the proposed schedule of rates. By mutual consent, the matter of preparing a valuation of the property of the company used

and useful in their service to the public, was waived. This is what the Supreme Court says in their decision just handed down:

"Valuation of a public utility's property is one of the essentials required to be proven in fixing rates and charges. But where the utility and complainant have expressly waived this requirement with the consent of the public utilities commission, and the net return is found to be below a just and reasonable return upon a valuation conceded by the complainant, no prejudicial error arises which demands a reversal of the commission's order."

### **New Rate Ordinance for Cincinnati, Ohio**

By a vote of 25 to 6, the Council of Cincinnati on November 29th, passed an ordinance fixing the rates for natural gas, effective December 15, 1921, as follows:

For the months of April to October inclusive,  
55c less 5c per M. cu. ft.

For the months of November to March, inclusive,  
55c less discount of 5c for 1st 5 M. cu. ft.  
60c less discount of 5c for 2nd 5 M. cu. ft.  
65c less discount of 5c for 3rd 5 M. cu. ft.  
70c less discount of 5c for all over 15 M. cu. ft.

Minimum charge—80c less discount of 5c.

## **The Current Year In The Petroleum Industry**

Summary of An Address by  
**WALTER C. TEAGLE,**

President, Standard Oil Company, (New Jersey)

Before Second Annual Meeting, American Petroleum Institute, Chicago, Dec. 6, 1921

Walter C. Teagle, president of the Standard Oil Company of New Jersey, speaking before the annual meeting of the American Petroleum Institute, Congress Hotel, Chicago, Ill., December 6, said that as he viewed the world's petroleum problem a year ago and as he sees it now it is to increase production to meet the expanding demand for petroleum products.

"The path that lies just ahead of us may traverse the foothills of temporary conditions," he said, "but beyond lies the mountain which must in the end be scaled, and that mountain is the petroleum consumption of the future. To say that we will be on higher ground presently is not to deny that in between we will encounter the succession of ups and downs which constitute the day to day history of the industry. If there were those who interpreted my words of last year to mean that the unprecedented growth in the consumption and value of petroleum products which had been maintained without a break for over four years was to be a permanent condition, and that henceforth overproduction would be impossible, I am glad that the disillusionment came before there was an opportunity for these words to mislead. If I had realized at our last meeting that the grip of commercial depression then closing about world commerce would continue to tighten until business was reduced to a condition of suspended animation, I should have stressed the fact that mine was a long range view, and would have said that from conditions which for a time robbed every single commodity of its normal market value petroleum could not be expected to be immune."

Mr. Teagle reviewed the factors entering into the decline in crude oil



prices early in the year. "That there is an uncontrollable factor, an element of chance peculiar to petroleum, has been emphasized by this as by every other crisis in our history," he said. "We are without the stabilizer of reserves which is in a measure the safeguard against extreme fluctuations of prices in other branches of industry."

Mr. Teagle pointed out that the petroleum industry deals in a product of mercurial qualities in that nature permits no mathematical appraisal of her hidden stores, and man has devised no practical method of economically utilizing on a large scale the surplus of today as provision against the shortage of the far tomorrow.

### Features of a Real Reserve

"The extent to which progress has been made towards an ideal but unattainable position of a perfect balance between production and consumption is the provision that it has been possible to make for reserve supplies for the future. The pathway to the ideal position would seem to be to maintain production at a given level, irrespective of current requirements. The accumulation of a petroleum surplus which would be a real reserve when production results temporarily fell behind would necessitate—first, a very considerable expansion of existing storage, and, secondly, such stabilization of prices as would encourage continuous production operations. Adequate reserve storage may be within the bounds of commercial development, but the intimate relationship which exists to a remarkable degree between the several departments of the petroleum industry and which causes variations in values, either in the markets for the raw material or for the manufactured product, to be immediately registered in all departments, renders the question of price stabilization exceedingly difficult, if not incapable of solution."

Mr. Teagle pointed out the difficulties of accumulating petroleum reserves for, say a year, instead of only for 137 days. A preliminary difficulty is shown in the fact that while coal and iron still unmined may be an individual heritage from one generation to another, title to petroleum wealth only obtains when it is brought to the surface. Ordinary lease obligations usually compel early production. Regarding the financial aspects of the problem, he said, the first is that of finding the capital. The 137 days' supply of crude on hand in this country at the end of September represented, in addition to cost of tankage, an investment of over \$500,000,000, and this commitment of the purchasers was further increased by the liability of the interest and other carrying charges. Applying this to a year's reserve of 500,000,000 barrels, we are confronted with the necessity of a budget in excess of \$1,250,000,000 for the crude alone, and an annual carrying charge covering interest, depreciation, evaporation and taxes of over \$170,000,000. The physical problems of a year's reserve of petroleum would also be prohibitive, he said.

"When, as happened early this year, none of the purchasing companies was able to take the risk involved in financing the storage of large quantities of crude at the high price then prevailing, runs were reduced, and the price at the wells declined. In this instance the limitation was a financial one, for at that time storage for perhaps 50,000,000 barrels was available. Under such conditions as then prevailed, quotations tend to fall below the cost of production, and the effect is two-fold, first, to remove the incentive to further drilling, and, second, to establish a price which justifies the industry in again assuming the risk of carrying the low-priced oil against future needs. Either one of these or the two in combination have in the past operated to establish the necessary balance.



### Time-worn Charge of Marking Down Prices

"In the recent past we have heard revived the accusation which is not an uncommon accompaniment of declining crude markets that purchasing companies were seizing advantage of an opportunity to arbitrarily mark down prices in order to accumulate stocks at the low level. How utterly at variance is this time-worn charge with the patent facts is apparent from a recapitulation of the situation."

Mr. Teagle then pointed out that the purchasing companies are actually today contemplating a record of expenditures of many millions of dollars during the first few months of this year in the accumulation of additional stocks of crude, while the value of their total stocks on hand at the present time are less than the value of the stocks on December 31 last.

"It is obvious that an industry so highly competitive as ours, and in conditions such as have obtained in the markets for all commodities, prices cannot be arbitrarily marked up or down, and that the reductions in value were the direct effect of the sudden disappearance of markets. The oil producer then was in exactly the same position as the American farmer, who saw his cotton, corn, wheat and oats declining in value with the lessened demand."

He called attention to the curtailment of consumption of petroleum products abroad and the less marked reduction in the purchases at home. "It is not difficult," Mr. Teagle said, "in the light of world events to interpret these figures of the early months of the year. Foreign countries, and especially Europe, could not consume because they could not pay, and the buying power of the American people was materially curtailed. A realignment of prices was the inevitable if rude remedy. Such a violent price adjustment as we have experienced in our own and other industries is perhaps not the ideal medium of establishing the equilibrium between supply and demand, but in centuries of trading the world has not improved upon the principle that the measure of value is the price that can be obtained. Our changes have not been too abrupt and too extreme to be helpful, especially those through which we have just passed, but no one will deny that we have lived too long in the rarefied atmosphere of inflated values and that the health of American business demanded that it return to a more normal altitude. High prices gave commerce the glamor of fictitious prosperity. Everyone was getting more, but paying more, and veteran producers have assured me that while \$3.50 oil looked attractive, inefficient labor and high priced material took the bloom off the rose and that the decline in the price has produced corresponding compensation in decreased costs.

### An Established Policy to Meet Abnormal Conditions

"It will not be amiss, however, for us to ask ourselves whether, after full allowance has been made for the uncontrollable basic factors of the petroleum industry, we have done all that we could for its stabilization. The public feels sometimes that it pays too much for too little, and would be better satisfied, as we would be, too, with 25-cent gasoline the year round, instead of a price of 20 cents at one season and 30 cents at another. We realize also that \$1 Mid-Continent crude was below cost and therefore uneconomic. Insofar as the difficulties in the way of stabilization are not inherent and ineradicable, any suggestions for their amelioration are worth consideration and will be welcome. In that spirit it may be asked whether

(Continued on Page 35)

## The Coal Carbonization Investigations Made By The Ohio State University

By PROF. D. J. DEMOREST, Professor of Metallurgy



Professor D. J. Demorest

therefore, for this state is to get everything ready for the production of artificial gas before the natural gas supply diminishes so greatly as to cause real hardship.

It would not do to wait until preparations for an artificial gas supply would have to be made in frantic haste, but rather the proper way is to begin making artificial gas to supplement the failing natural gas, mixing the artificial with the natural gas. In this way the artificial gas industry can be gradually built up on a secure and firm basis, increasing the proportions of artificial gas mixed with natural gas gradually. This way people would become accustomed to the new gas without distress.

Forseeing this situation the Department of Metallurgy of The Ohio State University, about three years ago, asked the President of the University through the Director of the Engineering Experiment Station of the University to secure funds from the legislature for the erection of an experimental coal gas retort for the purpose of carrying out a thorough investigation of the usefulness of the Ohio coals for artificial gas making purposes.

After a delay of about two years the grant was made and \$10,000 was appropriated for the erection of a full commercial scale vertical retort and gas purifying system. This retort is exactly identical in size and shape with those used for the artificial gas supply in Rochester, New York. The equipment was built by the United Gas Improvement Contracting Company of Philadelphia, Pa., who built the Rochester plant. This company furnished the materials and erected it for the University at cost, as they

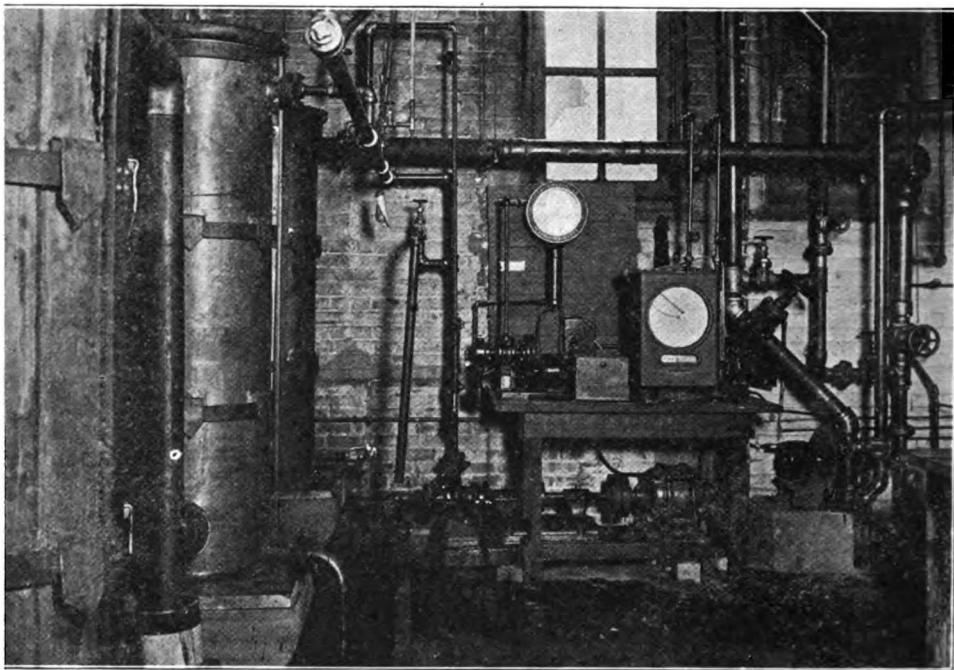
About three years ago it became evident to those in touch with the gas situation in Ohio that it would be only a very short time until the supply of natural gas in Ohio and contiguous territory would be entirely insufficient to meet the demands. Indeed, even at the present time Ohio is only producing about one-third of its requirement of natural gas. The obvious thing,



VIEW OF RETORT

recognized the need of such investigations when it was brought to their attention by the writer. The vertical retort has a capacity of one ton of coal at a charge.

Excluding oil as being too costly, artificial gas can be obtained from one source in amounts sufficient for modern cities; this source is coal. Now artificial gas can be obtained from coal in two ways, either the coal can be subjected to destructive distillation in a retort or it can be gasified in a water gas generator. If the second method is used, to be successful it must work either on anthracite coal or coke. Anthracite coal is rapidly becoming as scarce as natural gas, hence it must be ruled out in all considerations concerning artificial gas in this part of the country. Therefore coke must be the fuel used in the water gas generator. Now since coke is made by the destructive distillation of coal with the simultaneous



BY-PRODUCT RECOVERY SYSTEM

production of coal gas, it will be seen that the success of the manufacture of water gas will depend upon the manufacture of coal gas.

Coal gas is not obtained from coal by driving gas out of it by heat, because coal does not have gas in it any more than limestone does. The gas is made from the coal when heated because the organic compounds which coal contains break up and produce new compounds, some of which are solid, some liquid and some gaseous. These gases made from one ton of coal have a volume of about 10,000 cu. ft. and a heating value of about half of natural gas per cubic foot. In addition to this 10,000 cubic feet of gas, one ton of coal produces about 1,300 pounds of coke, 100 pounds of tar and 5 pounds of ammonia. The ammonia and tar are valuable by-products and are sold by the gas works.

If we use 300 pounds of the coke to heat the coal gas retorts we have

left 1,000 pounds to be sold for domestic purposes or for steam purposes, or it is used in the manufacture of water gas. The gas works may find it profitable to dispose of a large proportion of the coke to domestic consumers, since in properly designed house heating furnaces, coke makes a very fine sootless fuel, and rely upon coal gas as the chief gas supplied to the city mains. On the other hand, it may be best to use practically all of this 1,000 pounds of coke to make water gas to be mixed with the coal gas from the coal gas retorts. If this is done, we will get 30,000 cu. ft. of water gas of 300 B. T. U. cu. ft., to be mixed with the 10,000 cu. ft. of coal gas, thus getting 40,000 cu. ft. of gas from one ton of coal in addition to the by-products, tar and ammonia. This gas can be mixed with natural gas in amounts which may be demanded by the waning natural gas supply.

Although artificial gas thus described has a lower heating value than natural gas per cubic foot, it has a **higher efficiency per B. T. U. since it burns with a higher temperature**, because of the fact that its flue gases carry away less heat. This is a matter not generally understood but of very great practical importance, and will become appreciated when artificial gas is used in this state.

We are carrying out gasifying tests on all the coals of Ohio so that we may have available for the cities and gas companies of the state detailed information as to the gas and by-product making value of Ohio coals. This work has been going on continually since last March and it is hoped that by next spring the information desired on Ohio coals will be quite complete. We are carrying out these tests primarily on Ohio coals because naturally we wish this market to be available to our own coals and of course our own coals can be supplied for our cities more cheaply than any other coals.

The operating funds for this work are being supplied by the Southern Ohio Coal Operators' Association and the Ohio Gas and Oil Men's Association, who have taken a very advanced stand on this matter.

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## THE CURRENT YEAR IN THE PETROLEUM INDUSTRY

(Continued from Page 32)

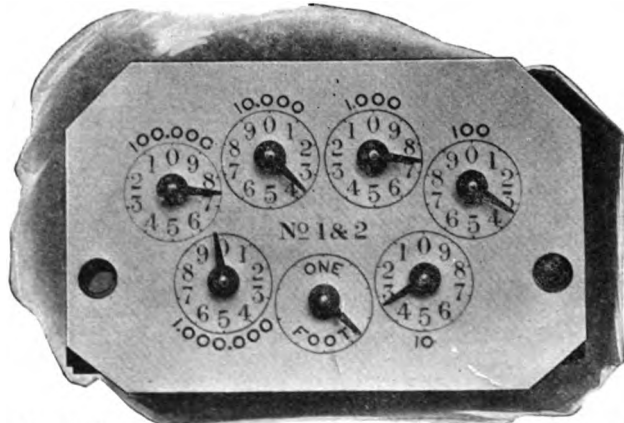
the industry should not aim at an established policy and the accumulation of financial resources to provide a market and storage for the surplus in season of overproduction or slackened consumption. It may have occurred to you that if the investment in that percentage of the refining capacity of the country by which the Bureau of Mines says we are overbuilt; if the capital represented by these tankers and tank cars and other equipment which were unnecessarily brought into existence during the high price mania; if these vast amounts of unproductive wealth had been definitely appropriated and earmarked for the financing of additional crude stocks, these violent reactions which are so hurtful to all might not have been so prolonged or so severe. The United States has been doing a little better than its share towards the maintenance of the world's petroleum supplies. While the world's production has more than doubled in twelve years, we have increased our annual proportion from 64 per cent in 1916 to 68 per cent in 1919, but this has only emphasized our need of a war chest which will always be available in periods of depression to withdraw from the markets that portion of the world's output which industry is not able to absorb and to conserve it against the certain time when famine follows plenty."

## How To Read Your Gas Meter

The "register" or "index" of a gas meter is the recording or indicating part of the instrument. There is nothing mysterious or complicated about this mechanism for it is a simple train of small pinions and gears designed and worked out to measure in units of cubic feet.

The word "clock" has often been applied to this part of a gas meter but this term is used in error. It is misleading and conveys a wrong impression. The running of a clock depends entirely on a spring for its power while the "index" of a gas meter depends upon the operation of the meter itself. In other words, a meter will not run unless gas is passing through it and the "index" will not register unless the meter is running.

Each small finger or hand on a meter "index" is connected to a pinion and these pinions have direct relation one to the other. When a gas meter leaves the factory, these fingers on the "index" point to zero. As soon as the meter commences to pass gas, "index" immediately commences to



register and all of the hands commence to move. Of course, the movement of the hands on the high denomination circles will not be perceptible, but the point is that they are connected to the whole train of the "register" and even the recording of ten feet on the hundred foot circle has moved the million foot hand some, even though the distance of travel cannot be perceived or measured.

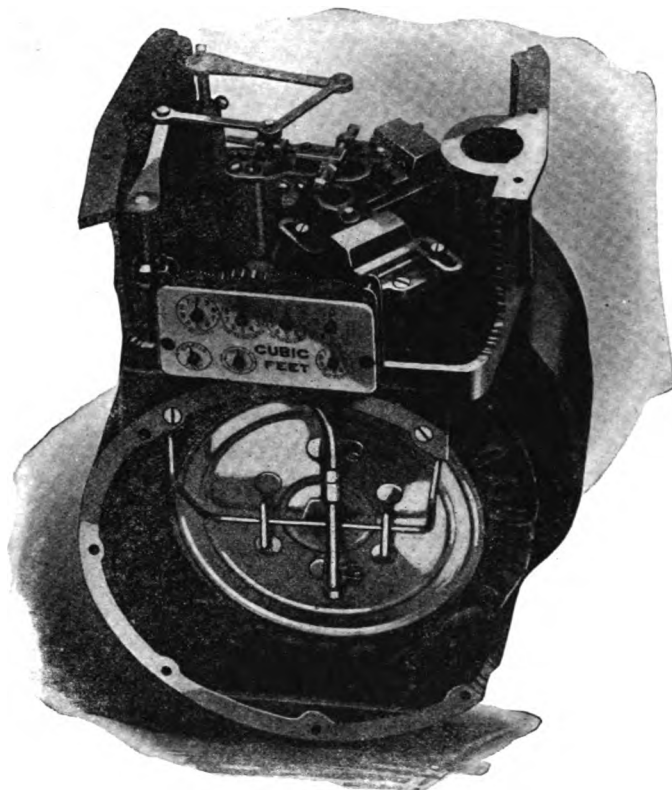
The figures just above or just underneath each circle on the "index" indicate an amount of gas in cubic feet that has passed the meter when the hand or finger has made a complete revolution. Don't make the mistake in thinking that in the circle marked ten thousand for instance, that each sub-division of this circle means ten thousand cubic feet. Each sub-division of the ten thousand foot circle means one thousand feet or ten thousand for a complete revolution.

With this explanation you can see how, when the finger or hand has gone around the hundred foot circle, the hand on the thousand foot circle has only moved one space because each sub-division on the thousand foot circle means one hundred feet. Therefore, before the hand on the thousand foot circle will make one complete revolution or register one thousand feet, the hand on the hundred foot circle will have to make ten complete revolutions.

This same rule applies to the one million foot circle as well. Each sub-

division of this circle represents one hundred thousand cubic feet and before the finger of the one million foot circle will make a complete revolution, indicating the passage of one million feet through the meter, the finger on the one hundred thousand foot circle will have to go clear around ten times.

This relationship between the circles of the dial makes it necessary to commence reading a meter dial, as it might seem to some, backwards. In



other words, you start at the highest circle and read down to the next lower, etc. In each case putting down the figure which the hand or finger has just passed.

When a finger or hand apparently rests at zero and you do not know what to do, look at the hand on the next lower circle and see whether it has reached or passed the zero mark.

This will tell you immediately on which side of the zero the doubtful finger is. If the hand on the next lower circle has not yet reached zero, completing its revolution, the next higher hand has of course not reached zero. If, however, the lower hand has clearly passed the zero mark and started out again on another revolution, you may know positively that the finger of the higher circle has also passed zero.

A correct understanding of the meter "index" would probably remove the largest part of the feeling of mystery and suspicion that the ordinary individual has about the gas meter. The meter itself is one of the most sensitive instruments made. Its correctness is infinitely more uniform than the correctness of your watch.

## New Gas Rate Schedules Filed with the Public Utilities Commission of Ohio

From September 25, 1921, to October 25, 1921

### **BEREA PIPE LINE COMPANY**

**Berea**—Schedule effective November 15, 1921.

Ordinance passed October 24, 1921, for a period to and including July 25, 1923.

55c per 1000 cu. ft.

Discount—5c per M.

Readiness-to-serve charge—50c.

(Old Rates)—First 5,000 cu. ft. 48c per M.

Next 5,000 cu. ft. 53c per M.

Next 5,000 cu. ft. 58c per M.

All over 15,000 cu. ft. 63c per M.

Discount—3c per M.

Minimum charge—50c a month.

**Brooklyn Heights**—Schedule effective October 26, 1921.

Ordinance expires September 25, 1924.

New Rates same as for Berea.

(Old Rates)—Same as for Berea.

**Brook Park**—Schedule effective December 15, 1921.

No ordinance.

Both new and old rates same as for Berea.

**Olmsted Falls**—Schedule effective November 15, 1921.

Ordinance passed November 7, 1921, for period to and including July 25, 1924.

Both new and old rates same as for Berea.

**Rural—Cuyahoga, Lorain and Medina Counties**—Schedule effective December 15, 1921.

No ordinance.

Both new and old rates same as for Berea.

**Cleveland**—Schedule effective December 15, 1921.

No ordinance.

Both new and old rates for domestic users same as for Berea. In addition, the schedule continues in effect the following rate for

#### **Industrial Users**

28c per 1000 cu. ft.

Discount—3c per M.

No minimum charge.

### **EAST OHIO GAS COMPANY**

**East Cleveland**—Schedule effective November 24, 1921.

Ordinance passed October 18, 1921, for period ending June 30, 1924. Said ordinance provides that if at any time during the term thereof, said The East Ohio Gas Company

shall agree with the City of Cleveland upon a rate lower than that named in the East Cleveland ordinance, then the inhabitants of the City of East Cleveland shall be entitled to and shall pay the same rate as the users of natural gas for domestic purposes within the City of Cleveland.

First 10,000 cu. ft. 55c per M.

Next 10,000 cu. ft. 65c per M.

All over 20,000 cu. ft. 80c per M.

Discount—5c per M.

Minimum charge—\$1.50 per month.

(Old Rates)—First 10,000 cu. ft. 50c per M.

Next 10,000 cu. ft. 60c per M.

All over 20,000 cu. ft. 80c per M.

Discount—5c per M. cu. ft.

Minimum charge—\$1.50.

**Poland**—Schedule effective November 21, 1921.

Ordinance passed October 3, 1921, Expires August 28, 1925.

65c per 1000 cu. ft.

Discount—5c per M.

Readiness-to-serve charge—50c a month.

(Old Rates)—40c per 1000 cu. ft.

Discount—5c per M.

Readiness-to-serve charge—50c a month.

### **MACKSBURG GAS COMPANY**

**Macksburg**—Schedule effective November 1, 1921.

No ordinance.

40c per 1000 cu. ft.

Discount—5c per M.

Minimum charge—\$1.00 a month.

### **MANUFACTURERS LIGHT & HEAT COMPANY**

**Brilliant, Costonla, East Liverpool, Ekeyville, Empire, Knox, Knoxville, Grover, Mingo Junction, New Alexandria, Rayland, Richmond, Steubenville, Toronto, Wellsville, Wintersville, Yorkville and Rural territory in Columbiana and Jefferson Counties**—

Schedule effective December 15, 1921.

No ordinances.

First 10,000 cu. ft. 47c per M.

Next 10,000 cu. ft. 52c per M.

Next 10,000 cu. ft. 57c per M.

All over 30,000 cu. ft. 62c per M.

Discount—2c per M.

No minimum charge.

(Old Rates)—First 40,000 cu. ft. 47c per M.

All over 40,000 cu. ft. 62c per M.

Discount—2c per M.

**Bellaire, Bridgeport, Martins Ferry, Shadyside and Rural territory in Bel-**

**mont County**—Schedule effective December 15, 1921.

No ordinances.

First 10,000 cu. ft. 45c per M.

Next 10,000 cu. ft. 50c per M.

Next 10,000 cu. ft. 55c per M.

All over 30,000 cu. ft. 60c per M.

Discount—2c per M.

Minimum charge—25c a month.

(Old Rates)—First 40,000 cu. ft., 45c per M.

All over 40,000 cu. ft. 60c per M.

Discount—2c per M.

Minimum charge—25c a month.

**Duffey, Hannibal, Sardis and Rural territory in Monroe County**—Schedule effective December 15, 1921.

No ordinances.

First 10,000 cu. ft. 37c per M.

Next 10,000 cu. ft. 42c per M.

Next 10,000 cu. ft. 47c per M.

All over 30,000 cu. ft. 52c per M.

Discount—2c per M.

Minimum charge—25c a month.

(Old Rates)—First 40,000 cu. ft. 37c per M.

All over 40,000 cu. ft. 52c per M.

Discount—2c per M.

Minimum charge—25c per month.

#### **NORTH MERCER NATURAL GAS COMPANY**

**Ft. Recovery**—Schedule effective November 1, 1921.

No ordinance.

First 3000 cu. ft. \$1.25 per M.

All over 3000 cu. ft. \$1.00 per M.

Discount—None.

Readiness-to-serve charge—50c a month.

(Old Rates)—First 1000 cu. ft. \$1.50 per M.

Next 2000 cu. ft. \$1.25 per M.

Next 2000 cu. ft. \$1.20 per M.

Next 5000 cu. ft. \$1.00 per M.

All over 10,000 cu. ft. \$1.50 per M.

#### **NORTHWESTERN OHIO NATURAL GAS COMPANY**

**Bowling Green**—Schedule effective December 22, 1921.

Ordinance passed for period of two years from December 18, 1921.

First 5000 cu. ft. 37c per M.

Next 5000 cu. ft. 47c per M.

Next 5000 cu. ft. 57c per M.

All over 15,000 cu. ft. 67c per M.

Discount—2c per M.

Readiness-to-serve charge—75c a month.

(Old Rates)—First 5000 cu. ft. 37c per M.

Next 5000 cu. ft. 42c per M.

Next 5000 cu. ft. 47c per M.

Next 5000 cu. ft. 52c per M.

All over 20,000 cu. ft. 57c per M.

Discount—2c per M.

Readiness-to-serve charge—65c a month.

**Maumee**—Schedule effective December 22, 1921.

Ordinance passed for period of two years from December 18, 1921.

Both new and old rates same as for Bowling Green.

**North Baltimore**—Schedule effective December 22, 1921.

Ordinance passed for period of two years from December 18, 1921.

Both new and old rates same as for Bowling Green.

**Perrysburg**—Schedule effective December 22, 1921.

Ordinance passed for period of two years from December 18, 1921.

Both new and old rates same as for Bowling Green.

**Toledo**—Schedule effective December 22, 1921.

Ordinance passed for period of two years from December 18, 1921, unless sooner repealed by Council; the Council reserving the right to repeal said ordinance at any time.

Both new and old rates same as for Bowling Green.

#### **OHIO FUEL SUPPLY COMPANY**

**East Columbus**—Schedule effective November 18, 1921.

No ordinance.

50c per 1000 cu. ft.

Discount—5c per M.

Minimum charge 50c a month.

(Old Rates)—43c per 1000 cu. ft.

Discount—3c per M.

No minimum charge.

**Gahanna**—Schedule effective December 17, 1921.

No ordinance.

50c per 1000 cu. ft.

Discount—5c per M.

Minimum charge—50c a month.

(Old Rates)—45c per M. cu. ft.

Discount—5c per month.

Minimum charge—80c a month.

**Logan**—Schedule effective November 15, 1921.

Ordinance passed October 11, 1921, for period of one year.

Both new and old rates same as for Gahanna.

**New Albany**—Schedule effective December 17, 1921.

No ordinance.

Both new and old rates same as for Gahanna.

**South Zanesville**—Schedule effective December 12, 1921.

No ordinance.

New rates same as Gahanna.

(Old Rates)—40c per 1000 cu. ft.

Discount—5c per M.

Minimum charge—50c per month.



**St. Clairsville**—Schedule effective November 15, 1921.

Ordinance passed September 19, 1921, for five years.

95c per 1000 cu. ft.

Discount—5c per M.

Minimum charge—\$1.00 a month.

(Old Rates)—93c per 1000 cu. ft.

Discount—3c per M.

Minimum charge—\$1.00 a month.

**Zanesville**—Schedule effective November 15, 1921.

Ordinance passed August 1, 1921, for one year.

New rates same as for Gahanna.

(Old Rates)—40c per 1000 cu. ft.

Discount—5c per M.

No minimum charge.

#### PERMIAN OIL AND GAS COMPANY

**Caldwell, Dudley, Elba, Macksburg and South Olive**—Schedules effective December 15, 1921.

No ordinances.

45c per 1000 cu. ft.

Discount—5c per M.

Minimum charge—80c per month.

(Old Rates)—35c per M. cu. ft.

Discount—5c per M.

Minimum charge—60c per month.

#### SPRINGFIELD GAS COMPANY

**Selma and suburban territory**—Schedule effective November 24, 1921.

Ordinance passed October 24, 1921, for remainder of the ten-year period specified in Ordinance No. 180 passed October 5, 1914.

50c per 1000 cu. ft.

Penalty charge—5%.

Minimum charge—75c a month.

(Old Rates)—Same as for Selma, etc.

35c per 1000 cu. ft.

Penalty charge—5%.

No minimum charge.

## Geological Survey Has Compiled World's Oil Production Since 1857

The world's production of petroleum since 1857 has been compiled by the United States Geological Survey. Figures on the production were compiled from various records and duly credited, some of them of course being more or less inaccurate estimates, but the best obtainable. The compilation is by countries and totaled. The time is not separated by years but divided into periods, one period being 1857 to 1920, and the other period the single year of 1920. Each country is credited with its percentage of the total world output in the two given periods. As first compiled the figures were presented in cubic meters and metric tons as well as in barrels of 42 U. S. gallons, but for the persual of American readers, on the quotations in barrels are presented herewith:

COUNTRY	Production, 1920		Total Production, 1857-1920	
	Barrels of 42 gallons	Percent of total	Barrels of 42 gallons	Percent of total
United States .....	443,402,000	63.8	5,429,693,000	62.1
Mexico .....	163,540,000	23.5	536,524,000	6.1
Russia .....	25,429,600	3.6	1,904,021,000	21.8
Dutch East Indies.....	17,529,210	2.5	219,584,000	2.5
Persia .....	12,352,655	1.8	48,070,000	.5
India .....	7,500,000	1.1	122,583,000	1.4
Rumania .....	7,435,344	1.1	165,462,000	1.9
Poland (Galacia) .....	5,606,116	.8	171,263,000	2.0
Peru .....	2,816,649	.4	29,797,000	
Japan and Formosa.....	2,139,777	.3	42,810,000	
Trinidad .....	2,083,027	.3	11,356,000	
Argentina .....	1,665,989	.2	7,225,000	
Egypt .....	1,042,000	.2	6,990,000	
British Borneo (Sarawak)	1,015,949	.2	4,052,000	
Venezuela .....	456,996		1,335,000	
France (Alsace) .....	388,700		723,000	1.7
Germany .....	212,046		17,120,000	
Canada .....	196,937	.2	24,864,000	
Italy .....	34,180		1,042,000	
Algeria .....	3,916		37,000	
England .....	2,909		5,000	
Other .....			416,000	
<b>TOTAL</b> .....	<b>694,854,000</b>	<b>100.0</b>	<b>8,744,972,000</b>	<b>100.0</b>

## Notes of the Industry

The National Supply Company has just issued their new No. 30 Catalog, which is a very valuable reference book for those interested in the oil, gas and gasoline industries, and which gives the oil country the most complete catalog that has ever been compiled. The labor involved in finishing this work covered a period of one year and at tremendous cost.

### White Lime, Similar to Ohio, Found in Oklahoma

Ada, Okla.—Geologists have found in Pontotoc county an entirely new subject for speculation. The Nance Syndicate well, in the northwest quarter of section 4-4-5 has revealed the presence of a white lime which at that spot is 110 feet thick. It closely resembles a white lime found in Ohio oil fields, and whether it is of the Viola or the Hunton species is a matter for geological discussion. Geologists who have examined it are almost a unit in saying it is the Hunton.

### A Sizable Business

The petroleum refining industry represents an estimated investment of between \$1,500,000,000 and \$2,000,000,000. It produced last year upwards of 20,000,000,000 gallons of petroleum products valued at about \$3,000,000,000.

### Coke Oven Accidents

Statistics of accidents occurring at by-product coke oven plants and at beehive ovens during the calendar year 1920 have just been issued by the Bureau of Mines as Technical Paper 293, signed by William W. Adams. The figures cover 9721 by-product ovens and 43,173 beehive ovens, the former employing 17,184

men and the latter 10,955 men, during an average of 346 and 276 days per year respectively; the former reported 38 killed and 2380 injured, the latter 11 killed and 1035 injured. During the year it is estimated that by-product ovens produced 30,908,000 short tons of coke as compared with 20,980,000 by beehive ovens; the former also produced 5,764,458 tons of by-products.

Summarizing the causes for accidents in both by-product and beehive ovens during seven years ending with 1920, the totals being 379 killed and 32,229 injured, the causes are grouped as follows for killed and injured in per cent of the total: Cars, lorries, motors—24.0 per cent killed, 8.3 per cent injured. Railway cars and locomotives—17.4, 3.6. Coke drawing machines—4.5, 3.3. Electricity—4.8, 0.87. Falls of persons—11.6, 13.1. Hand tools—0.53, 11.1. Suffocation from gases—3.7, 0.67. Burns—8.4, 13.3. Gas explosions—0.53, 0.55. Dust explosions—0.0, 0.11. Falling objects—2.4, 2.8. Nails, splinters, etc.—0.0, 0.14. Run of coal or coke—0.79, 0.14. Other causes—21.4, 41.5.

It is thus seen that the fatal accidents are largely due to works, railways and other machinery, say 50 per cent; falling persons or objects claimed 14 per cent; burns and suffocation, 12 per cent, etc. Injuries had a different distribution: Falling persons and objects injured 16 per cent; burns, 13.3 per cent; machinery, 16 per cent; hand tools, 11 per cent, with a large percentage of miscellaneous causes. This seven-year experience in a business similar to city gas works operation should point the way to providing against accidents. It will be noted that a very minute percentage of trouble arises from the nature of the busi-

ness, and that practically all of it could be prevented by the exercise of care and forethought. Therefore, be careful.

### **Danzig and Galician Oil**

In an article on Galician oil production and trade the *Prezeglad Naftowy* (Petroleum Review) for July, 1921, discussed the future of Danzig as an oil-trading center. Poland has the second largest oil fields in Europe, and Danzig is the logical center for handling Poland's oil products for exportation to the northern States.

Galicia produced 765,000 tons of oil in 1920. Of this amount about 500,000 tons were, or will be, used within the country. The balance is available for export, and considering the probable future increase in production there will be a constantly increasing amount of exportable oil. Contracts with Finland and other Baltic countries have already been made.

### **Oil Fields in Northern Siam**

A very promising but undeveloped oil field is thought to exist in the extreme north of Siam, across from one of the Burma oil fields, which is similar topographically. Seepages have been found and it is understood that some shallow borings have yielded petroleum of a good quality, with an asphalt base, but accurate information is not available, as the field has not been explored. The Government has not yet decided whether it will operate the oil fields as Government enterprises or will give concessions to private concerns.

### **Fewer Completions in October Says the "Derrick"**

Oil City, Pa.—Completions in the oil fields of the United States during October were 1,198, according to the "Derrick." This is a loss of 17 as compared with September. New production was 169,903 bbls., a gain

of 8,839 bbls. Dry holes were 309, a loss of 58. Gas wells were 169, an increase of two. The amount of new work at the end of the month aggregated 5,121, an increase of 70.

### **Two American Oil Men Reported Lost in Far North**

New York City—Word has reached here that Frank Keeley and A. Warburton, who went into Fort Norman last winter from the Yukon country and staked oil claims, have been missing since April. It is believed that they were drowned on the return trip in some northern river. Keeley was once a Brooklyn newspaper reporter and went north with one of Stefansson's expeditions into the Arctic.

### **Raising Fund for Restoring Gas to Galena, Illinois**

Galena, Ill.—A meeting which affected the civic life of this city more than any other held for some time was held at the Elks' Club recently, when approximately 200 citizens met to discuss the gas question. Whether or not the former gas plant should be re-opened and the manufacture and distribution of gas resumed was the problem which caused the meeting to be called.

The meeting was most enthusiastic and it was decided that Galena shall have gas as soon as possible. A committee to supervise the raising of funds was appointed and they will start immediately a drive for \$10,000 as an initial fund. Subscribers to this amount will be given a 25 per cent reduction on their gas rates until the money loaned the company has been repaid.

Prospects for the manufacture of gas soon, look very bright. Arthur J. Smith, a Chicago gas manufacturer, was at the meeting and has spent several days in the city looking over the old plant with a view to remodeling that structure.

Galena has been without gas since the spring of 1920, when the residents opposed the raising of rates.

### Industries Using Less Natural Gas, Compilation Shows

Columbus—Use of natural gas by factories and industries in Ohio is gradually being eliminated, according to figures compiled today at the offices of the state public utilities commission.

The figures show that only 18 billion cubic feet was sold to industrial users during the year 1920, as compared with 21 1-3 billion cubic feet in 1919 and 23 1/2 billion cubic feet in 1918.

This decrease in industrial consumption is due to efforts of the natural gas companies to save the remaining supply of the valuable fuel for domestic consumers, and to the fact that the available supply of natural gas for all purposes is diminishing rapidly.

That the supply is failing rapidly is indicated by the fact that in 1918 the companies in Ohio distributed 173 1-3 billion cubic feet, in 1919 they distributed 164 billion cubic feet, while in 1920 only 148 billion cubic feet were distributed. Though the demand was greatly increased, the supply was diminished by 16 billion cubic feet from 1919 to 1920.

The majority of the natural gas used for industrial purposes is consumed in the summer months when the demand for domestic use is lightest. Were it not for the revenue derived from the sale of gas to industries in the summer, domestic users would have to pay a much higher price for the fuel.

---

### Stephoe Case

Hearings were resumed in the suit of the State of Ohio and Pennsylvania against West Virginia in which West Virginia seeks to prevent gas being taken out of the borders of her state, before the Supreme Court of the United States, at Washington, D. C., on December 5th.

### Public Is Fair

That it is the disposition of the people and their elected representatives to be fair in their dealings with natural gas companies when they really understand the necessity for higher prices to conserve natural gas, is demonstrated by the following two recent occurrences:

At Zanesville, the people by referendum vote approved an increase of ten cents per thousand cubic feet for natural gas, by a majority of 2,145 out of a total of 9,000 votes cast.

At Sandusky, the city commission has adopted an ordinance providing for the following schedule of rates: 60 cents net per thousand for the first 2,000 cubic feet; 65 cents net per thousand for the next 3,000 cubic feet; 70 cents net per thousand for the next 5,000 cubic feet, and 75 cents net per thousand for all in excess of 10,000 cubic feet.

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### Standard of Indiana and Texas Company to Operate Under Each Other's Patents

The Standard Oil Company, (Indiana), owner of the Burton, Humphreys, Clark and other patent rights, and The Texas Company, owner of the Adams, Holmes-Manley and other patent rights, all pertaining to the pressure cracking of oil in connection with the manufacture of gasoline and other petroleum products, have effected an arrangement whereby each has the right to operate under the other's patents, and whereby, under an agreed division of royalties, either may license others to operate under any or all of said patents. The granting of licenses to others to use these patents, should result in benefiting the industry as a whole, and also increase the supply of petroleum products essential for the use of internal combustion engines.

## Scraps Picked Up Here and There by the Office Cat

A crowd of 1,000,000 persons standing in comfort would cover seventy acres.

Whist, played as long ago as 1500, was originally called "trumph."

In California there is a group of trees known as the giant forest. Many of these trees are said to have 400 years to their credit.

The remarkable volcanic region in Alaska known as the Valley of Ten Thousand Smokes actually contains, not 10,000, but millions of smoking volcanic vents, besides various other wonders such as Falling Mountain, where falls of rock occur every few minutes.

Switzerland has no language of its own. The official languages of Switzerland are French, Italian and German, all three being recognized as the "mother tongue" of the majority of the inhabitants.

Britain's war debt costs the nation \$1,522,500,000 annually, in interest alone.

The X-ray is used in aeroplane construction to detect defective materials, weak metal castings and workmanship, which would otherwise escape the eye of an inspector.

### Woman's Thimble Led to First Gas Burner

A woman's thimble is said to have been the means of suggesting the first gas burner. William Murdock, the inventor, first burned the gas

simply as a flame from the end of a pipe. One day in an emergency he wished to stop the illumination. Hurriedly looking around for something, Murdock seized his wife's thimble and thrust it over the light. There was a strong odor of gas, however, and the experimenter applied a light to the thimble, discovering that it was full of holes, through which tiny jets of flame appeared. The importance of the result was that the illumination from those two or three tiny jets was much brighter than had been given by the great flare from the end of the pipe. The discovery led to the construction of the first gas burner.

An enterprising Jap student at one of America's inland colleges, who landed here with practically no English in his vocabulary, secured a job on a farm during the vacation season. He assimilated the language readily enough and soon had a workable command of words—enough to get by with; but the feminine nouns properly applicable to the various domestic animals came near proving a German Marne. One morning he came running in very great haste to the master of the house, gasping as he ran:

"Please, honorable boss, come quickly—hen-pig, she have pups!"

Crushed sugar cane, after its juice has been extracted, is used for fuel in the sugar factories.

The first American domestic cigars, according to history, were made in 1801 by the wife of a tobacco planter in Connecticut.

# PITTSBURGH METER COMPANY

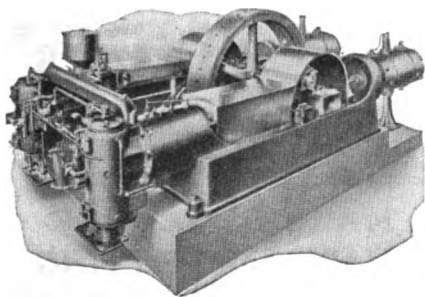
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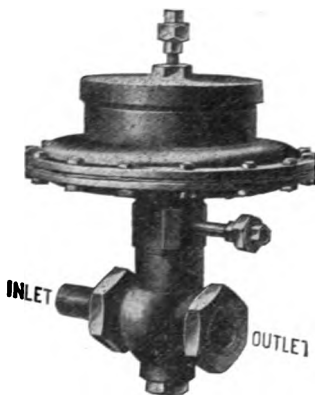
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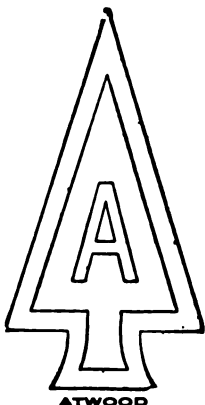
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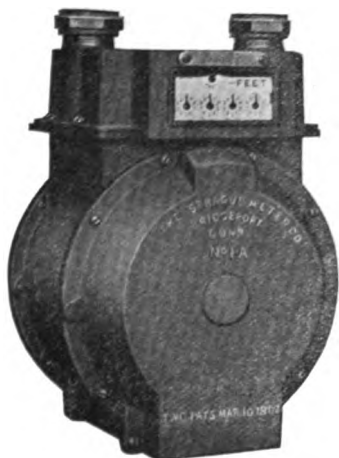
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# THE OHIO GAS AND OILMEN'S JOURNAL

Vol. 3

FEBRUARY 1921

No. 2



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DUES

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DUES

***Last Call!***  
***Come Now, Pay Up***

DUES

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DUES

# THE OHIO GAS AND OIL MEN'S JOURNAL

Vol. 3

APRIL 1921

No. 4



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**Bills for dues for the fiscal year from July 1st, 1921 to June 30th, 1922, will shortly be sent out. Some of you still owe dues for last year. Won't you please send in your dues for 1920-21 so that we may close our books with as few delinquents as possible.**

*This is a personal plea to you who in the joys of the baseball and fishing season have forgotten all about such prosaic matters.*

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## SEPTEMBER 27TH AND 28TH

Remember these dates for the Third Annual Convention of the Ohio Gas and Oil Men's Association, at Columbus, Ohio. We hope to have the pleasure of seeing you there.

Incidentally, of course, please pay your dues promptly for the year 1921-22, bills for which were sent you a few days ago.



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Since the weather has gotten somewhat cooler, and most of you are back from pleasant vacations, may we ask you to please pay up your dues for this year. We didn't expect you to think of DUES before this time, but before the shortage of natural gas grows acute and your coal bills come in, and the below zero winds freeze even your memory, SEND THEM IN. Please.

06-15-21

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**Gosh! We haven't had a cent  
from you all year.**

**This Means YOU**



**Not the Other Fellow—  
We had his long ago.**



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# METRIC METAL WORKS

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## 33

YEARS EXPERIENCE  
IN THE  
NATURAL GAS  
FIELDS















